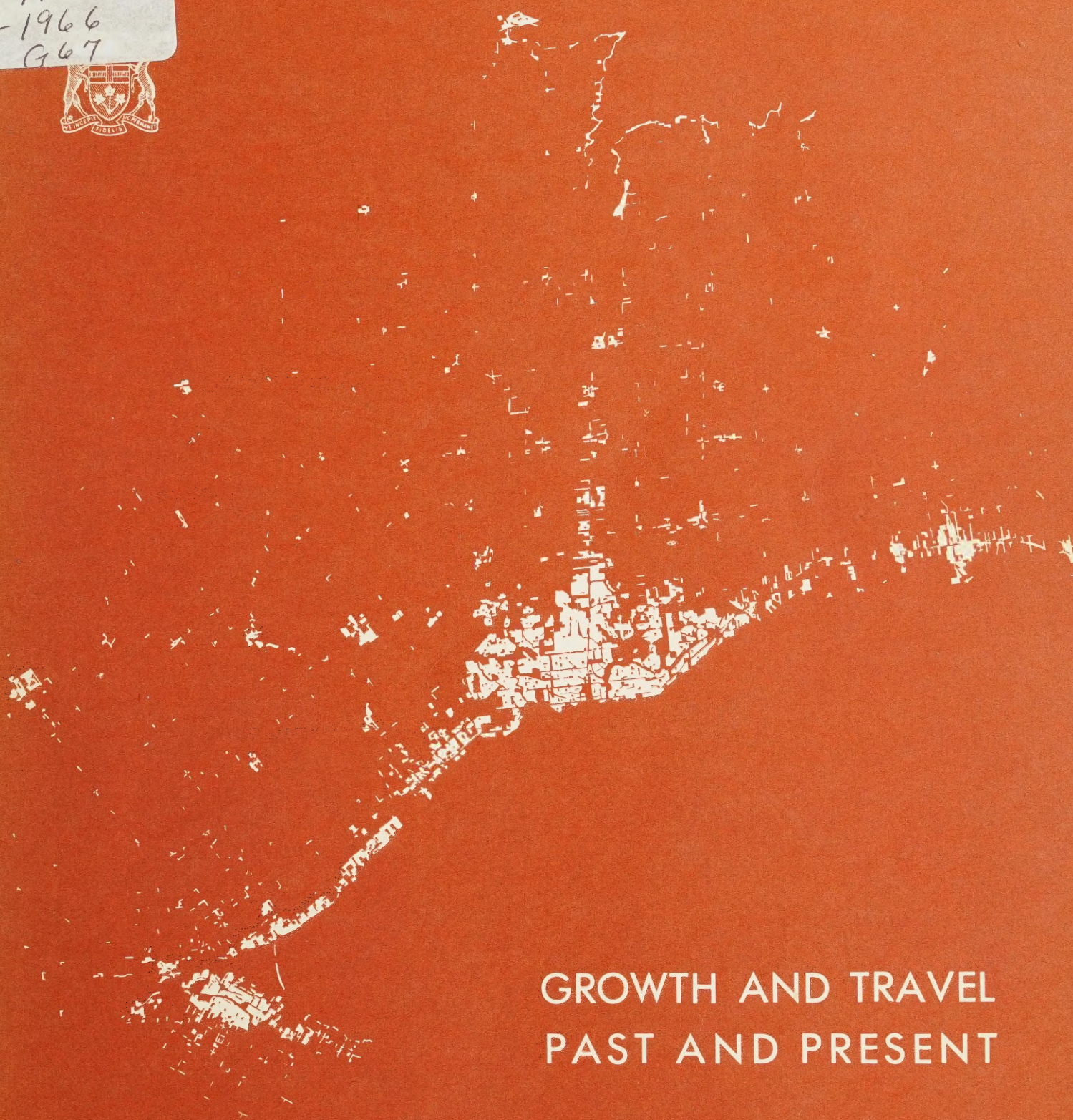


Metropolitan Toronto

METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

CA20N
MA51
-1966
G67



GROWTH AND TRAVEL PAST AND PRESENT



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761115475543>



METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

GROWTH AND TRAVEL PAST AND PRESENT

*A study of the basic components of growth in the
Toronto-centred region, and their relationship to
travel characteristics and demand.*

April 1966



STUDY ORGANIZATION

The Metropolitan Toronto and Region Transportation Study, instituted by the Ontario Government, is a co-operative venture with the Municipality of Metropolitan Toronto and major transportation operators in the region.

The Study is financed primarily by the Ontario Government, but important skills, data and facilities are being contributed by local government, railways and transit agencies.

Study policy is determined by an Executive Committee upon the advice and recommendations of a Technical, Advisory and Coordinating Committee. Detailed technical work is performed by consultants and existing agencies, and co-ordinated by a small Study staff.

EXECUTIVE COMMITTEE

HON. C. S. MACNAUGHTON, *Chairman*
Minister of Highways

HON. W. I. HASKETT, *Vice-Chairman*
Minister of Transport

HON. J. W. SPOONER
Minister of Municipal Affairs

W. R. ALLEN, Q.C.
Chairman
Municipality of Metropolitan Toronto

TECHNICAL, ADVISORY AND COORDINATING COMMITTEE

R. D. COWLEY, *Chairman*
Director
Traffic Engineering Branch
Department of Transport

E. COMAY
Commissioner of Planning
Metropolitan Toronto Planning Board

G. O. GRANT
Commissioner of Roads
Municipality of Metropolitan Toronto

J. H. SPICER
Toronto Area Manager
Canadian National Railways

W. Q. MACNEE, *Vice-Chairman*
Traffic & Planning Studies Engineer
Department of Highways

W. E. P. DUNCAN
Transit Consultant

N. B. ROBERTS
Regional Engineer
Canadian Pacific Railway

D. F. TAYLOR
Director
Community Planning Branch
Department of Municipal Affairs

STUDY DIRECTOR

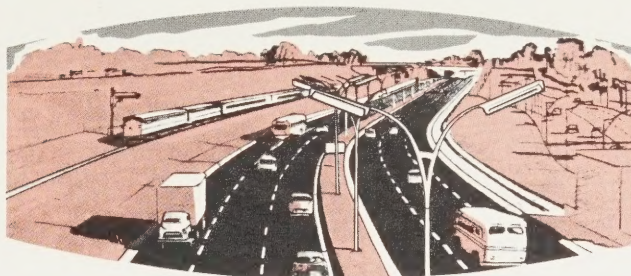
P. E. WADE



METROPOLITAN TORONTO AND REGION TRANSPORTATION STUDY

Telephone
365-5411

Box 227
Parliament Buildings
Toronto 2, Ontario.



April 1, 1966

Honourable C.S. MacNaughton,
Chairman, Executive Committee,
Metropolitan Toronto and Region
Transportation Study.

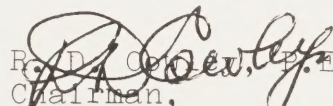
Dear Mr. MacNaughton:

I am pleased to submit the first of the final reports on the investigation of transportation and its related policies in the most intensively developed region of Ontario. Prepared by the Study staff, it presents the growth history of the region from its early beginnings and demonstrates how social and economic factors determine the pattern of demand for transportation services. The formulating of transportation policies is greatly helped by an understanding of these causative processes.

While compiling the extensive statistics making up this document, the staff received valuable and generous assistance from many individuals, agencies, and consultants in this area. Members of the Technical, Advisory and Coordinating Committee and the organizations they represent were particularly helpful. Substantial contributions of time and information were received from the Department of Highways, the Metropolitan Toronto Planning Board, the Toronto Transit Commission, and the Department of Municipal Affairs.

It is hoped that this document will provide a helpful background against which to view the main component processes of the Transportation Study, which include the preparation and review of transportation plans, the projection of regional development, and the formulation of fiscal and administrative recommendations.

Respectfully submitted,


R.D. O'Connell, P. Eng.,
Chairman,

Technical, Advisory and
Coordinating Committee.



ONTARIO
PROVINCE OF OPPORTUNITY

CONTENTS

LIST OF ILLUSTRATIONS	vi
INTRODUCTION	1
CHAPTER	
1 THE REGION	
<i>Geographic setting and economic role</i>	5
2 PAST GROWTH	
<i>History of development related to transportation</i>	15
3 PRESENT ACTIVITIES	
<i>The existing arrangement of land uses</i>	27
4 CURRENT TRENDS	
<i>The changing nature of the region</i>	39
5 TRAVEL DEMAND	
<i>The purpose, timing, direction and intensity of 1964 travel</i>	51
CONCLUSIONS	64
STATISTICAL APPENDIX	67

LIST OF ILLUSTRATIONS

Figure	Page
1 MTARTS Project Chart	2
CHAPTER 1	
2 MTARTS Region in Ontario Setting	7
3 Airline Passenger Trip Interchange, Continental Stations with Toronto in 1964	8
4 Toronto and Montreal Shares of Canadian Air Passenger Traffic in 1964	9
5 Location and Size of Metropolitan Markets within 500 Miles of Toronto	10
6 Accumulation of U.S. Metropolitan and Ontario Urban Populations with Increasing Distance from Toronto, 1960-61	11
7 External Freight Flows, MTARTS Region, 1964	12
8 Employment Structure, 12 Metropolitan Areas	13
CHAPTER 2	
9 Original Land Form, MTARTS Region	16
10 Regional Structure, 1821	17
11 Regional Structure, 1891	18
12 Regional Structure, 1921	19
13 Regional Structure, 1951	20
14 Regional Structure, 1964	21
15 Population Growth, MTARTS Region, by 10-year Census Intervals 1851 to 1961	22
16 Employment Composition, MTARTS Region, by Census Years 1851 to 1961	23
17 Toronto Area Structure, 1891	24
18 Toronto Area Structure, 1921	24
19 Toronto Area Structure, 1951	25
20 Toronto Area Structure, 1964	25
CHAPTER 3	
21 Density of Housing, MTARTS Region, 1964	29
22 Distribution of Urban Population and of Employment Concentrations, MTARTS Region, 1964	31
23 Industrial Groupings, 1964	33
24 Retail and Service Concentrations, 1964	34
25 Functional Groupings and Employment Distribution, Downtown Toronto, 1960	35
26 Municipal Boundaries, 1964	36
27 Division of MTARTS Region into Analysis Areas and Sectors	37

LIST OF ILLUSTRATIONS (CONT'D)

Figure	Page
CHAPTER 4	
28 Population Change, 1956 to 1964, in 23 Analysis Sectors	40
29 Average Household Size, 6-County Area, Census Years 1851 to 1961	40
30 Age Composition in 7-County Area, 1851, 1951 and 1961	40
31 Population Density by Distance from Toronto Centre, 1899, 1956 and 1964	42
32 Apartment Concentrations, MTARTS Region, 1964, Classified by Age	43
33 Value of Retail Sales in 23 Analysis Sectors, 1951 and 1961	44
34 Employment Change, 1956 to 1964, in Two Categories, for 7 Subdivisions of Metropolitan Toronto Planning Area	45
35 Employment Composition, Toronto Core, 1956, 1960 and 1964	46
36 Location of Traffic Cordons, Toronto Centre	46
37 No. of Persons Crossing Cordons, by Mode, 1930 to 1964	47
38 Accumulation Downtown, Persons by Mode, Typical Weekday, 1948, 1956 and 1964	47
39 Distribution of Population Change, 1956 to 1964, with Travel Time Contours, 1956 and 1964	48
CHAPTER 5	
40 Weekday Person-trips in MTARTS Region, 1964, by Activities Linked	52
41 Hourly Fluctuation of Travel, by Purpose, 1964	53
42 Duration of Trips, by Purpose, 1964	53
43 Average Number of Workers per Household in 23 Analysis Sectors	54
44 Work Trip Interchange between Seven Groupings of Analysis Sectors	54
45 Employment and Workers-Resident 1964, in 23 Analysis Sectors	55
46 Trip Duration, 1964, Variation of Local from Regional Average in 24 Analysis Sectors	56
47 Percentage Distribution of Trip Duration, Toronto, Hamilton, and Other Areas	56
48 Daily Variation of Volumes on Typical Roads	57
49 Composite Trip Desire Lines, A.M. Peak, MTARTS Region	58
50 Composite Trip Desire Lines, A.M. Peak, Metropolitan Toronto	59
51 Average Number of Cars per Household, 1964, by 23 Analysis Sectors	60
52 Choice of Transportation Mode for Trips Originating in 23 Analysis Sectors in A.M. Peak Period	61
53 Vehicle Volumes on Principal Roads, MTARTS Region	62
54 Vehicle Volumes on Principal Roads, Metropolitan Toronto	63



INTRODUCTION

In December 1962, the Government of Ontario issued Order-in-Council number 4092/62 which reads in part as follows: "Upon the recommendation of the Honourable Minister of Transport, the Committee of Council advises the formation of a committee to study and report on an overall transportation policy for Metropolitan Toronto and surrounding municipalities". Two committees were named, and the project became known as the Metropolitan Toronto and Region Transportation Study (MTARTS).

COMPONENTS OF THE STUDY

In keeping with the scale and significance of the assignment, an extensive study program was undertaken. The four major components of the program are shown diagrammatically in Fig. 1, and the objective of each component is briefly as follows:

Transportation Plan Review . . . From projections of growth, to determine the future extent and characteristics of travel demand, and the adequacy of transportation proposals; and to investigate and recommend feasible transportation modes and systems.

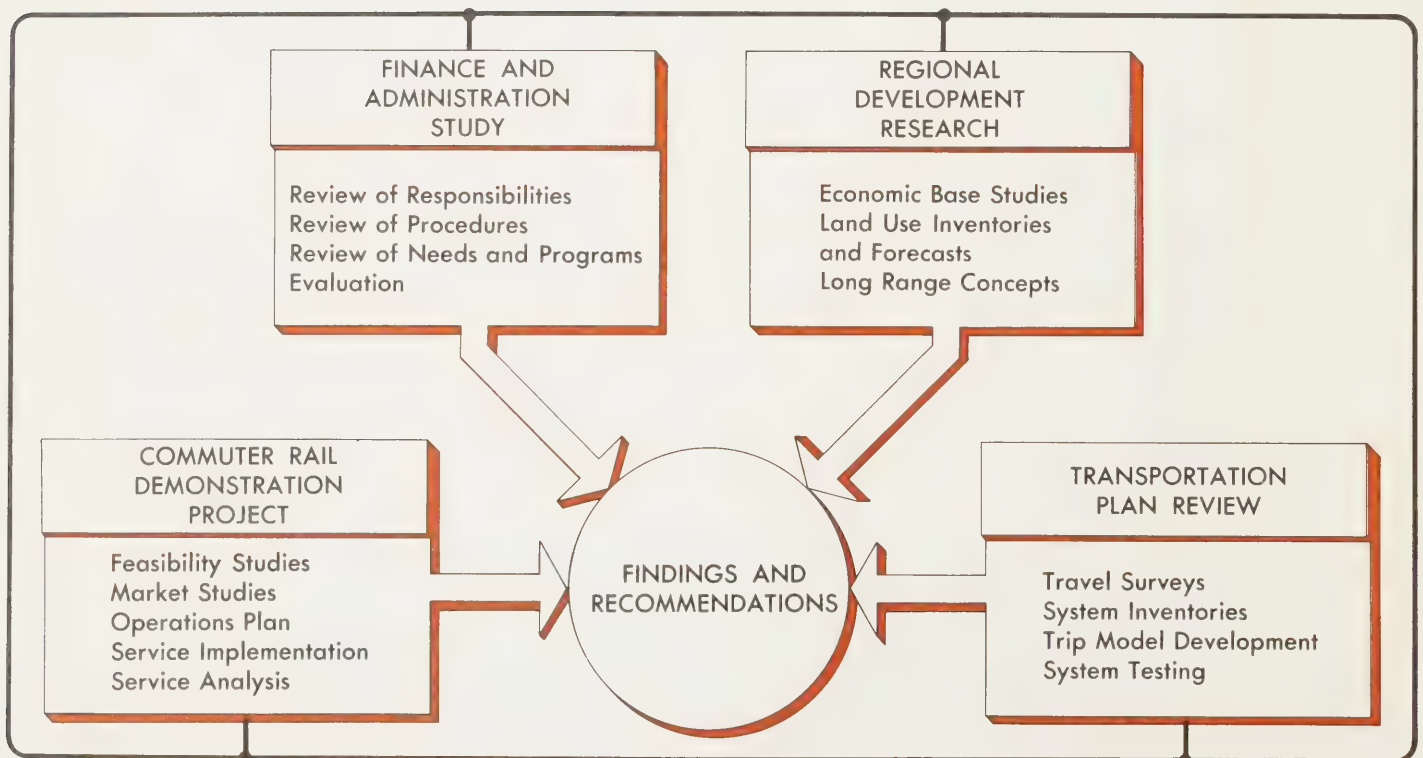
Regional Development Research . . . To determine the likely form and pattern of the region based on continuation of present trends; to consider the possibility of more desirable forms and patterns; and to assess the advantages of each.

Fiscal and Administrative Study . . . To determine the appropriate arrangements for funding and organizing the provision of transportation services and facilities.

Commuter Rail Demonstration Project . . . To measure public acceptance of a form of service not hitherto available, and to evaluate its role and potential in the region.

Fig. 1

MTARTS PROJECT CHART



The links show interflow of information

REPORTING PROGRAM

Each of the above investigations is a project of considerable magnitude. Together they constitute an integrated mobilization of official attention to a far-reaching aspect of regional growth and function. The scale and complexity of the subject has imposed the need to consider carefully the manner of reporting. Accordingly it was decided not to tender a single all-encompassing document at the close of the project, combining all compilations, procedures, findings and recommendations under one cover. Instead the opportunity should be afforded of examining the subject matter and thinking at each stage of the study process. The following procedure has therefore been adopted. Firstly, procedures, techniques, and statistical compilations will be recorded in a series of technical reports for limited distribution. Secondly, findings and proposals will be presented in a series of formal reports which reflect the sequence of study components and will have a wider distribution. The first of the latter series is the present report.

SCOPE AND ARRANGEMENT OF THIS REPORT

This report is an introductory exposition of past and present regional growth, and its effect on travel demand and characteristics. It is not designed to make projections or propose policy, but to provide a background of information against which the specific problems and findings to be presented in subsequent reports can be read.

The report is designed around a series of maps and diagrams. For the sake of simplicity, technical documentation has been excluded from the body of the report. Persons interested in details of derivation of the illustrations should refer to the Statistical Appendix.

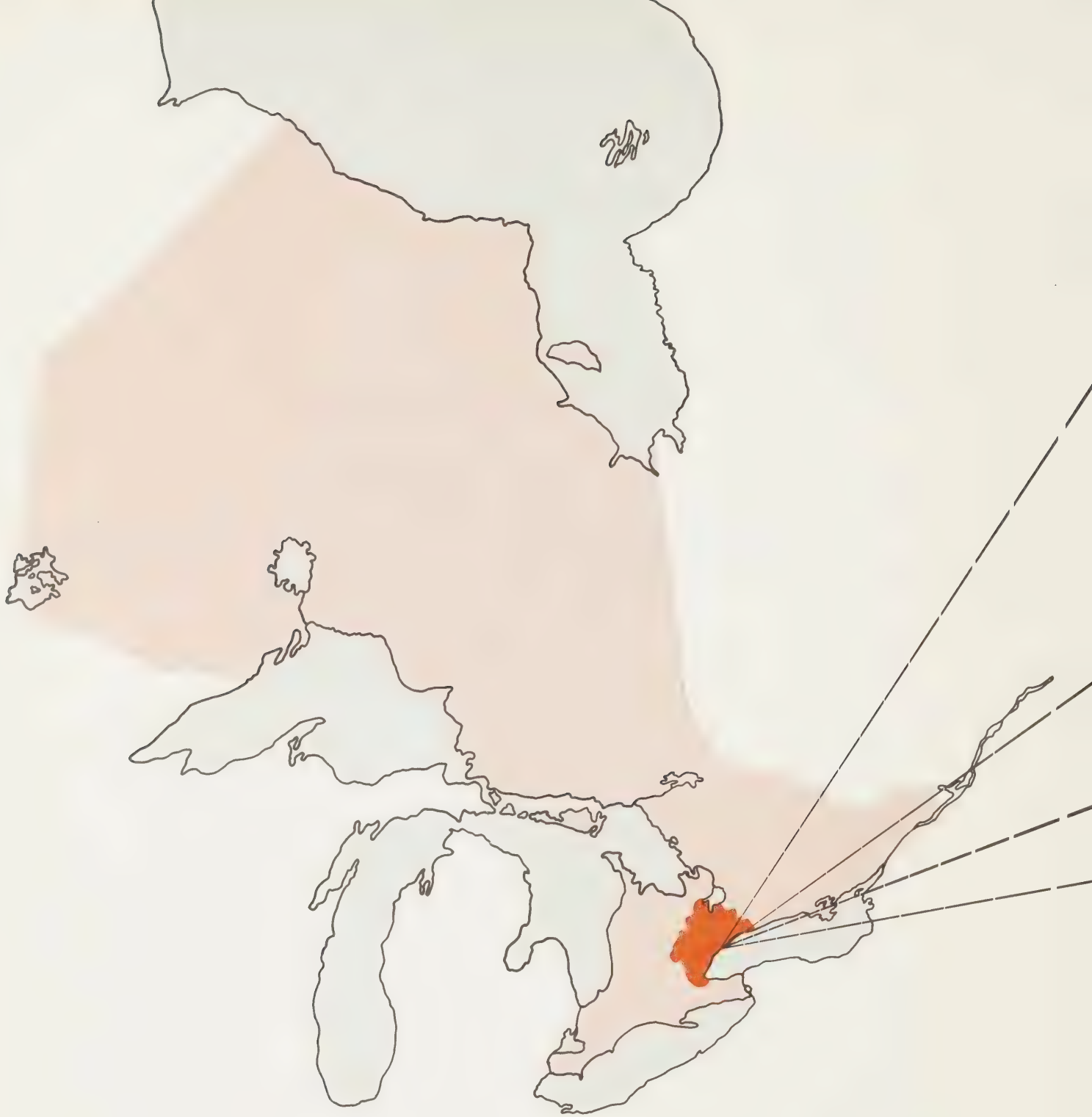
When the report depicts the existing situation, this should be understood to mean the situation in May-June 1964, when extensive surveys of regional travel and land use were conducted concurrently by MTARTS, the Metropolitan Toronto Planning Board, and the Department of Municipal Affairs.

The Region



Chapter 1

*Geographic Setting
and Economic Role*



Located in South-Central Ontario, the area under study

SETTING



Fig. 2

The region established for this study is shown in darker colour on the maps on these pages. Its land area is 3,200 square miles. It extends far enough from Toronto to include the home end of most work trips destined for the Toronto core, now and conceivably in the year 2000. It also includes four outlying cities whose commuter residential areas are overlapped by Toronto's.

In 1964, the region contained 2.8 million people. These represent 40 per cent of Ontario's population, but they live in an area which has less than one per cent of its land. Moreover, two-thirds of the region's people are concentrated near its lakefront centre, within the 13 federated municipalities of Metropolitan Toronto.

0 miles across and is centred on Toronto

Air travel patterns show the region interacting with all parts of the continent and emphasize its central role in the Canadian economy.

CROSSROADS



Fig. 3



Fig. 4

Airlines carry many of today's long-distance travellers.

Air trip volumes reflect the direction, distance and intensity of a region's interests and influence.

Toronto's strongest air links are with Montreal, New York and Ottawa, (400,000, 250,000 and 130,000 trips respectively in 1964).

The Toronto area generated over a million air passenger trips in 1964, more trips than any other Canadian centre.

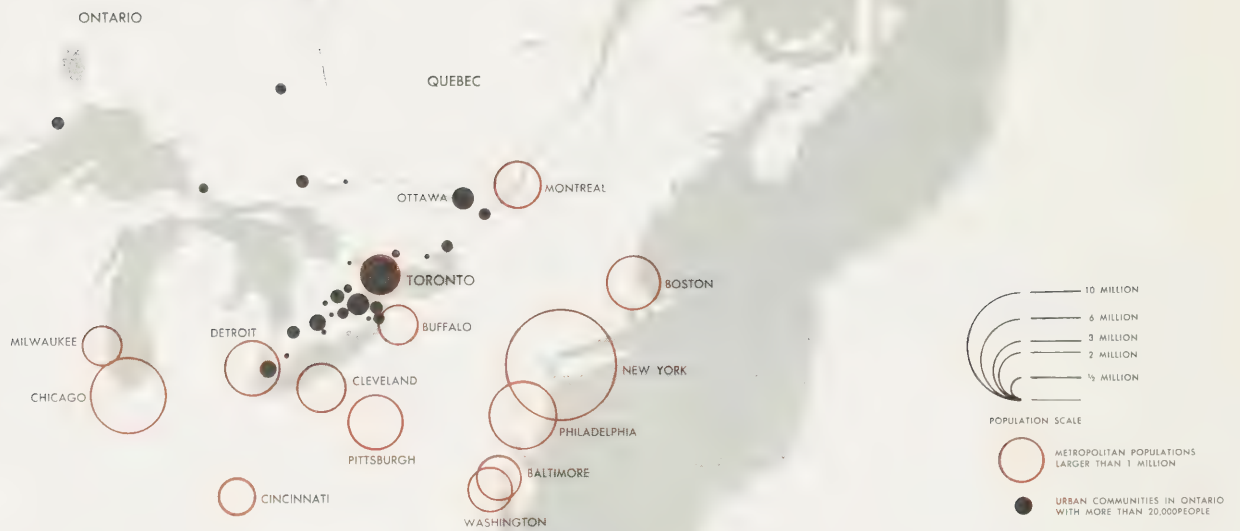


Fig. 5

ACCESSIBILITY

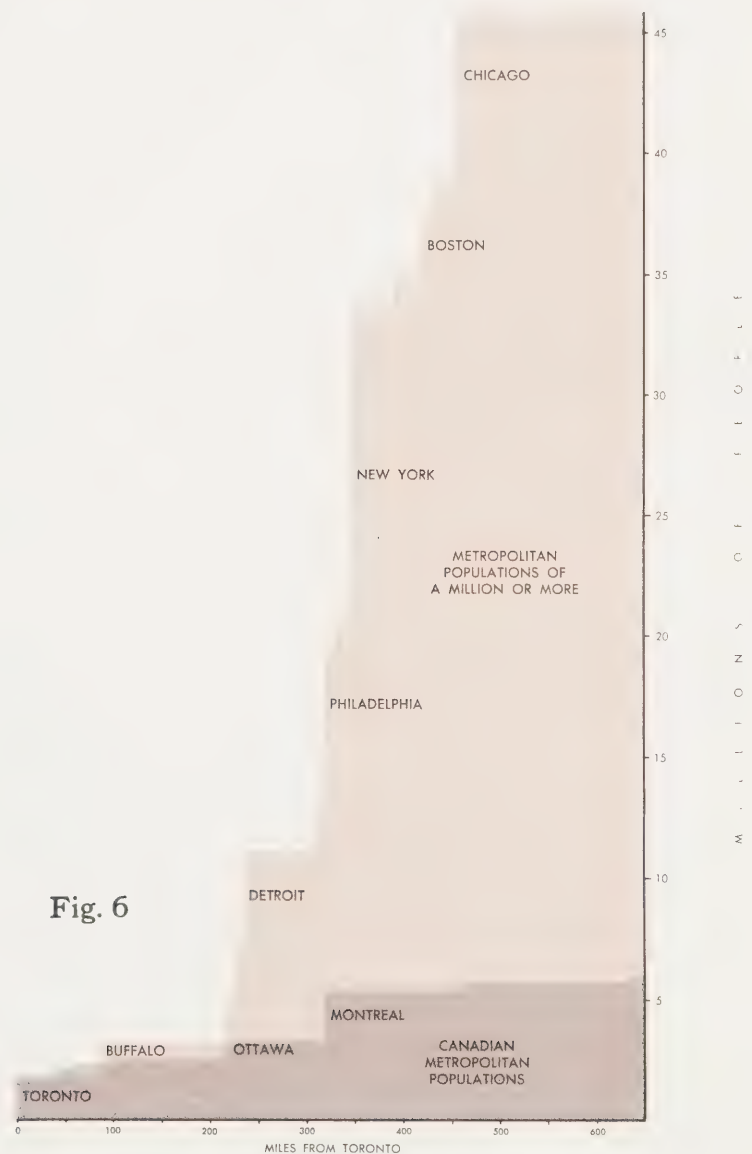
The region is close to mass markets and services.

The region contains the commercial heart and administrative capital of Canada's most populous province.

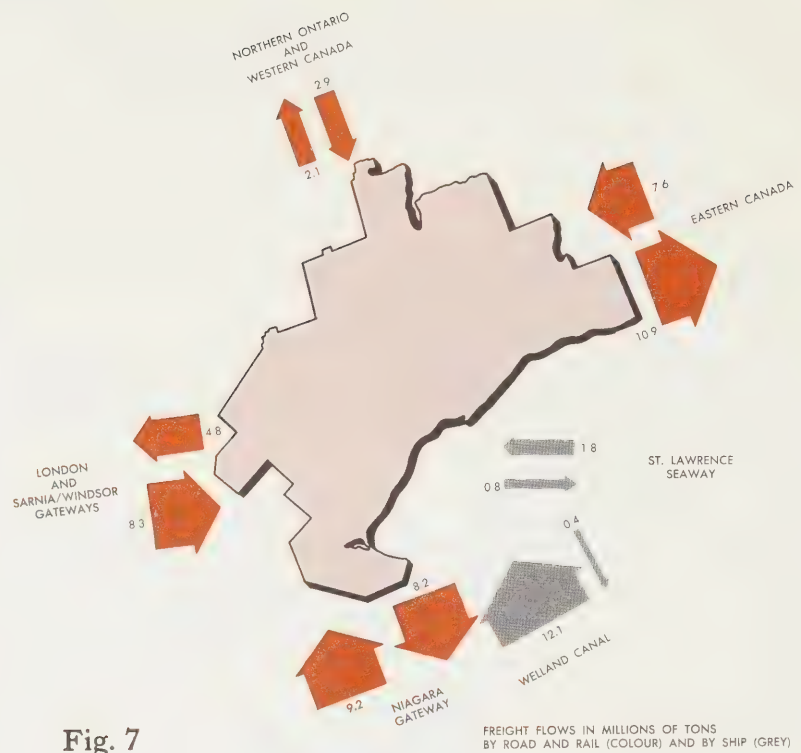
It is also part of a chain of fast-growing urban regions stretching down the Great Lakes and St. Lawrence Seaway from Chicago to Montreal.

This chain, with the parallel chain of Atlantic Seaboard cities, forms North America's largest grouping of metropolitan areas. Toronto's location within this huge complex is an asset in terms of marketing opportunities and accessibility of specialized services.

*Within 500 miles,
50 million people*



FREIGHT FLOWS



The movement of commodities is heaviest east and south.

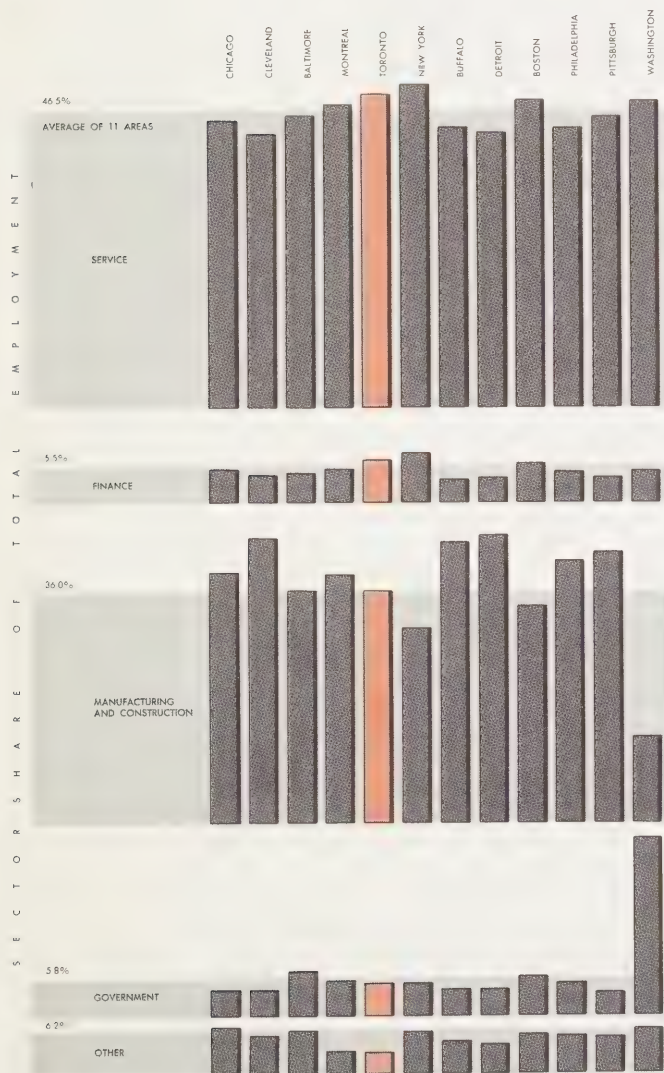
The region receives and transmits a vast tonnage of raw materials and merchandise, in 1964 almost 70 million tons.

The directional pattern is dominated by water-borne tonnage from the Upper Great Lakes, destined mainly to Hamilton. The St. Lawrence Seaway now links the region to the world's ports, but the heaviest flows are still within the continent.

In overland tonnage, there is an excess of east-bound over west-bound flows. This reflects the region's role as a processing and forwarding point for export produce.

FUNCTION

Service, finance activities strong in Toronto



A metropolis is identified not only by its size. It is also the variety and quality of social and economic activities which distinguish one metropolitan community from another.

Toronto is well diversified, as indicated here by the greater than average size of its service sector, which includes central administration, higher education, cultural facilities, communications and distribution.

Toronto's strength as a financial centre also stands out in this comparison of composition of metropolitan employment.

Fig. 8

Past Growth



Chapter 2

*History of Development
of the Region, Related
to its Transportation*

THE PHYSICAL SITE



Fig. 9

The region is a fertile sloping lakefront plain, broken by ravines and backed by escarpments and moraines.

The potential of the Great Lakes frontage for water transportation and water supply, and its superior agricultural soils, have persistently favoured growth in the southern part of the region.

The southern plain is broken by north-south valleys, ancient shorelines, and on the west by the Niagara Escarpment. These features have modified local development patterns and transportation routes, but never seriously hindered development.

The rivers were a significant early source of power for water-driven mills. These same watercourses are now emerging as important recreational assets.

Early decisions determined the present form of road grids and travel corridors, and the location of the provincial capital.

The decision taken in 1793 to establish the capital of upper Canada on the present site of Toronto gave new focus to communications in the area. Old trails along the northern lakeshore and north to Georgian Bay became strategically important, and were supplemented by new direct roads built by the military. These served also as the primary elements of the road network needed for trade and colonization.

The concept was bold and far-reaching, but the roads themselves were primitive, and often impassable.

As agricultural settlement proceeded, the government purchased and subdivided a succession of large tracts. Surveys imposed on the landscape a series of grids which persist in the road pattern to this day. The differences in grid alignment and road spacing affect local planning and are reflected in municipal road costs.

SETTLEMENT PATTERNS



*Railways opened up the hinterland,
spread industry and expanded trade.*

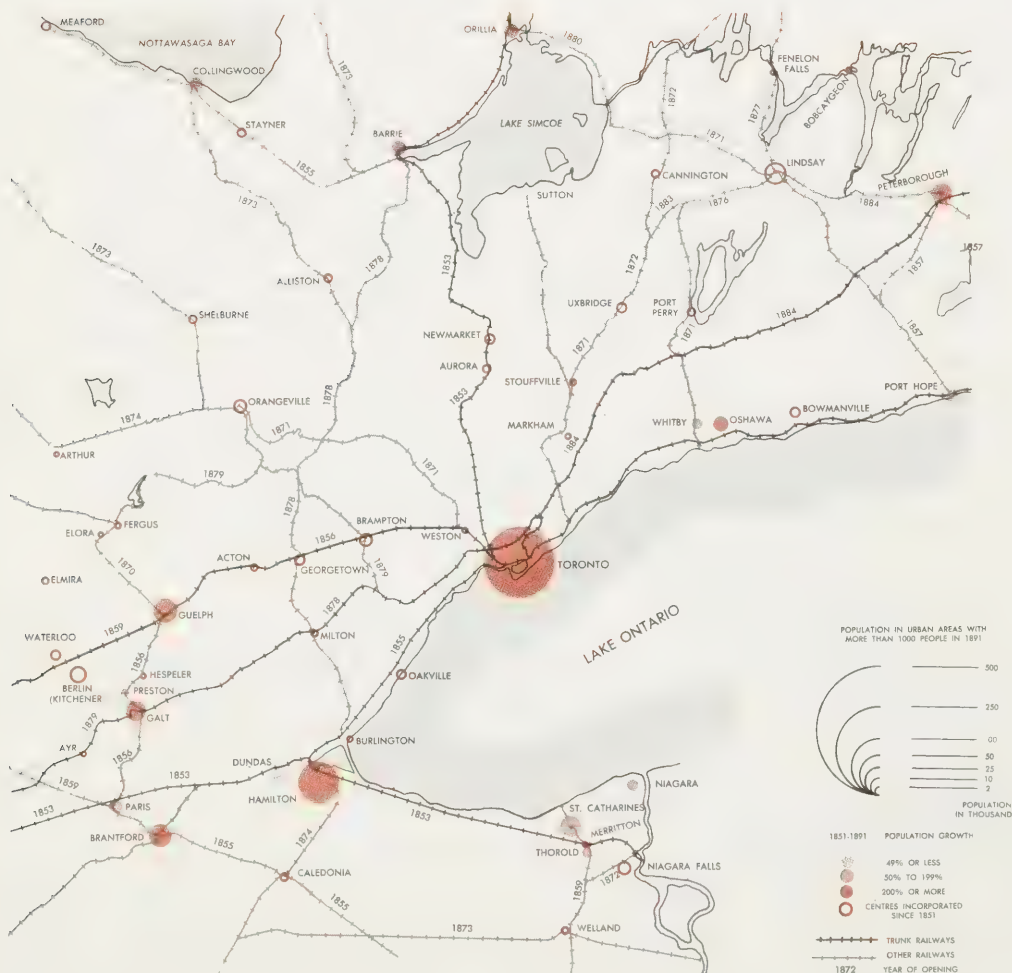


With the departure of the first train from Toronto for Aurora on May 16, 1853, there began an era of rapid growth for the towns along the burgeoning railway network, and especially for Toronto.

Compared to the road wagons and coaches of that period, trains gave fast, reliable, high-capacity service. Local industries tapped wider sources and markets, and prospered. Farmers enjoyed improved access to lake ports and later, as the evolving rail network formed direct links with Toronto, the capital accumulated the port activities of the smaller places and emerged as the provincial centre of trade and finance.

Railway alignments were not tied like the early roads to the local survey grid. Railway routes often were shorter.

RAILWAYS AND URBAN GROWTH



1851-1891

Fig. 11

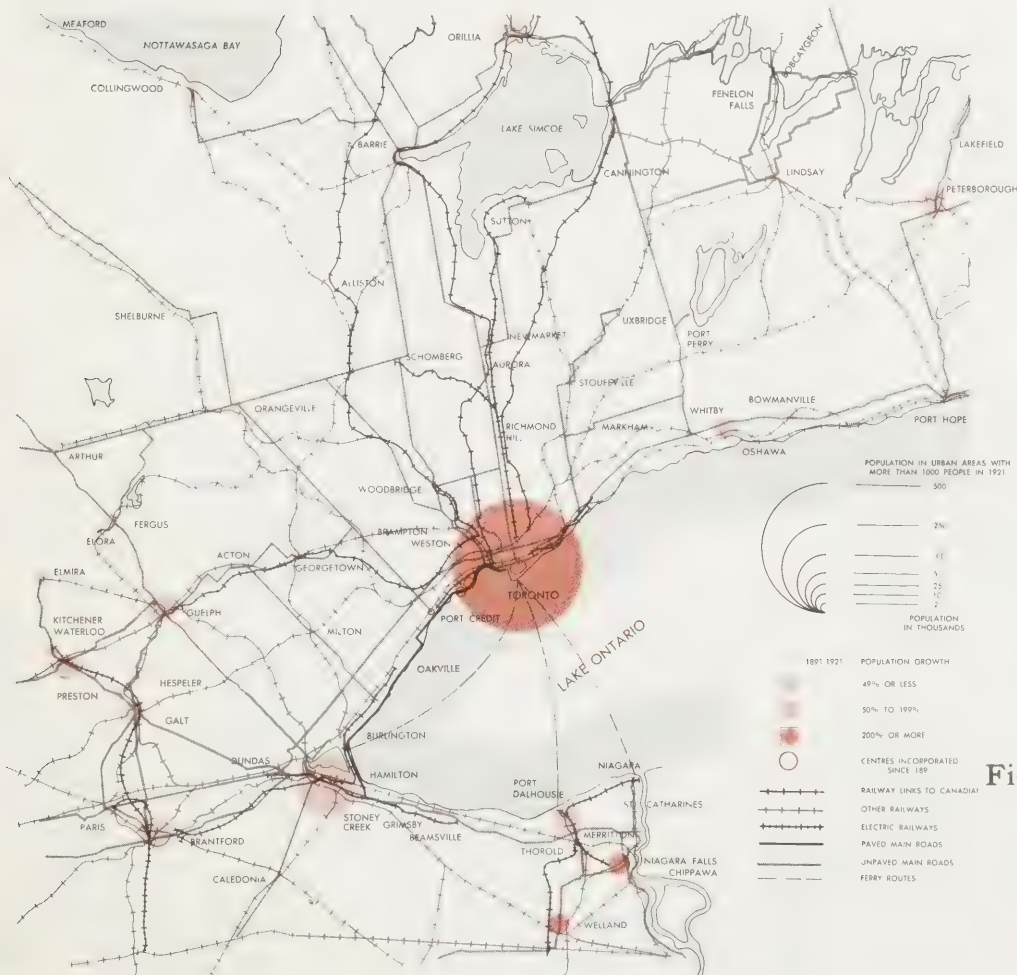
NATIONAL INFLUENCE

People, products and capital from the region participated in opening up the West. The growing centres spread radial offshoots.

In this period of settlement of Western Canada, Toronto assumed additional roles as a national provisioner and financier. All cities' share of regional growth became larger.

A second set of railways — electric interurbans or “radials” — spread out from the bigger cities, with the intention of linking up to form a comprehensive system.

Cars and trucks, while playing a lesser transportation role, were appearing in increasing numbers. There was a growing demand for road improvements, and the first paved highway was constructed between Hamilton and Toronto.



1891-1921

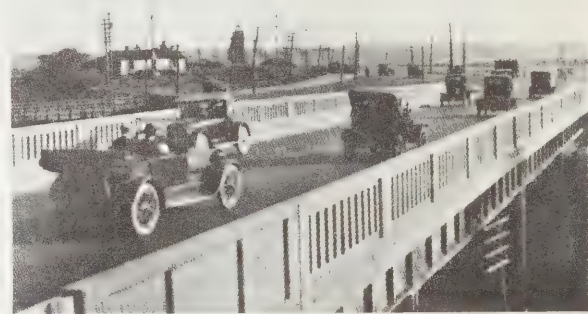
Fig. 12

Cars and trucks gradually assumed the principal transportation role from other carriers. Urban growth took on new dispersed patterns.

The region continued to attract an increasing share of national and provincial growth. Development favoured the lakeshore and a few inland centres.

Developing areas now began to take a less compact form, due to the freedom of location made possible by cars and trucks.

The number of motor vehicles increased sevenfold in this 30-year period. Railways lost some local traffic, while ferries and electric outer-suburban lines succumbed completely to competition. In spite of vigorous construction programs, road capacity never quite caught up with the rising traffic demand.



RETURN TO THE ROADS



1921-1951

Fig. 13

GROWTH EXPLOSION

Between 1951 and 1964 a million more people and rising affluence boosted the region's transportation demands still higher. In response to a doubling of motor vehicle registrations, the highway system was further improved and extended. Expressways were built to bypass urban congestion, and commuting by car became popular. Towns previously self-contained became dormitories for main centres of employment, and showed rapid increases of population. The commuter areas of the main centres expanded and began to overlap.

The ever-increasing weight and complexity of travel demand seemed to call for a diversity of travel means, and there was renewed interest in rapid transit and other forms of mass transportation.

New high-capacity facilities shortened travel time between cities, and extended commuter areas.



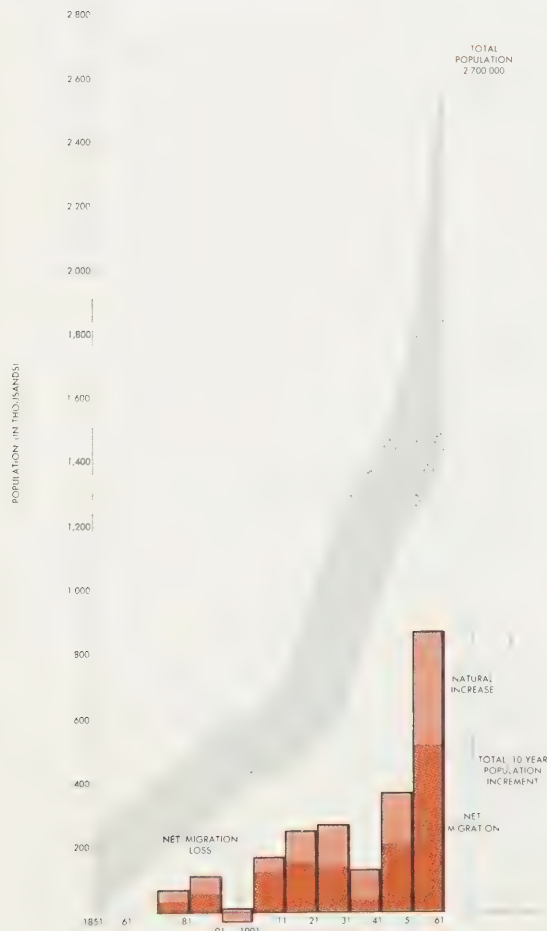
1951-1964

Fig. 14

Expanding population has been the basic element in building up the region's strength as a production and marketing area, and in establishing Toronto's position as a national service centre.

This growth had two components: a large net migration of people attracted to the region from other parts of Canada and from abroad, particularly since 1945; and a substantial natural increase sustained by a high birth rate and by greater longevity.

MORE PEOPLE IN THE REGION



High immigration and birth rates helped double the region's population every 30 years.

Fig. 15



Fig. 16

..AND MORE JOBS

Employment opportunities drew people to the cities.

The emphasis in job opportunities shifted through the years from farm and forest to industry and office, with a corresponding change from rural to urban living, and increasing concentration in the metropolitan areas.

The chart on this page shows the early dominance of farming and lumbering, supplanted after 1911 by manufacturing and service. It highlights the spectacular recent increase of the service sector.

The region's main source of strength and dynamism is this great diversity of specialized skills and functions, in marked contrast with regions having economies based primarily on a single advantage such as transportation location, natural resources, or a basic industry.

The attraction of diverse opportunities is most evident at the centre of the region, whose rapid physical growth is recalled on the next page. Other metropolitan areas in the region show parallel growth stages.

Toronto ended its first 150 years of growth a compact place, fitted snugly to its street transit pattern. Then, in only 20 years following World War II, it more than doubled its pre-war area. Universal car ownership made possible the low densities of the new suburbs. Transit, temporarily out-reached, later accepted the challenge of the new pattern.



Toronto's first public transportation service — a six-passenger horse-drawn omnibus — began running in 1849 from King Street to Yorkville. Other routes followed.

Then came a change to horse-drawn cars on rails beginning in 1861; and by 1891, when the population was 144,000, the route mileage exceeded 30. Other local travel was by horse-and-buggy and bicycle.



Fig. 17

TOWN TO



Fig. 18

Electric street cars replaced horse cars beginning in 1892. Extensions enlarged the system to 100 route miles by 1921, when the population had risen to half a million. Development conformed closely to transit routes, and densities were uniformly high.

Radial electric lines extended from connecting points on the transit system to places as far distant as 60 miles.



Fig. 19

A major transit reorganization in 1921 consolidated and improved transit service in the City of Toronto. Meanwhile, the residential fringe moved on beyond the City limits at new lower densities, due to rising incomes, quest for spacious living, and use of the automobile. Transit extensions followed cautiously.

METROPOLIS

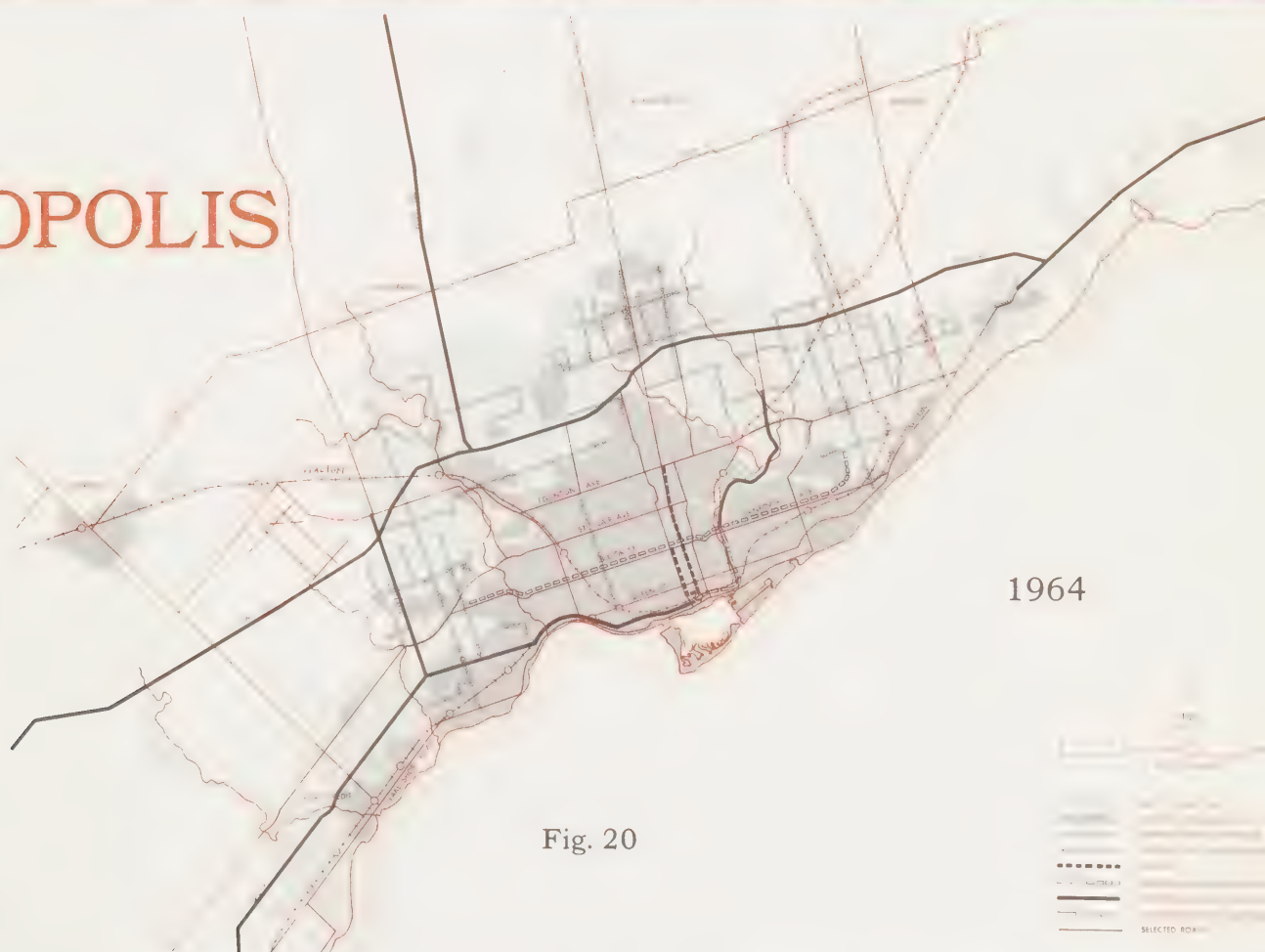


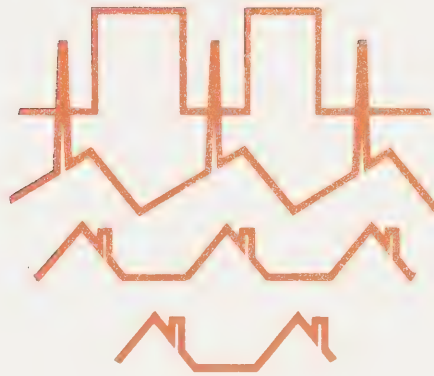
Fig. 20

The rate of construction of new homes in the suburbs reached record levels in the 1950's, aided by reorganization of local government and the opening of urban expressways. New suburban employment attracted significant cross-town traffic.

The success of Toronto's first subway, opened in 1954, encouraged and enabled transit to extend into the suburbs, while it also spurred high-density redevelopment around subway stations and along feeder routes.

In the latter half of the period, developers were turning increasingly to the building of apartments in all areas. Housing densities rose, and the rate of outward expansion of the perimeter slowed.

Present Activities



Chapter 3

*The Existing Arrangements of
Land Uses Which, Interacting,
Create the Pattern of Travel Demand.*

RESIDENTIAL USE

More than half the region's developed land is occupied by housing in one form or another. Home is the starting or finishing point for nine out of every ten trips made in a vehicle. The location and density of housing therefore is of primary concern in a study of the movement of people.

A hundred and fifty years of home building has resulted in the pattern of residential densities shown on Fig. 21 opposite. Densities range from more than 40 dwelling units per gross residential acre (in parts of the City of Toronto) to less than 1 (in some outer suburban locations).

Not shown on this map is the extent of sometimes wide local variation of density. Traditional housing was of uniform height, seldom more than three storeys. Higher densities where they occurred were due to closer spacing and row house formation, but there were few abrupt changes. Tall apartments are now replacing the older houses at many points, offering sharp contrasts and raising district densities. In the suburbs too, apartments and multiple housing complement the prevailing single family dwellings.

The map shows housing areas reaching far out along the main transportation routes leading from each metropolitan centre. These areas vary greatly in character, from compact formal subdivisions to the unserviced scatter typical of early postwar fringe development.





Fig. 21

The movement of people is keyed foremost to the location and density of housing.



Lines of heaviest demand for urban travel are determined mainly by where people live in relation to where they work.

On the map Fig. 22, the coloured dots represent the distribution of people resident in the housing areas shown on the preceding map (Fig. 21).

The shaded discs show where most of the jobs in the region lie and, by the size of disc, the relative numbers of jobs.

Notwithstanding the much-remarked postwar “flight to the suburbs”, by far the largest concentrations of both people and jobs are seen to be still in the central cities of the respective metropolitan areas.

The reader will notice that neither population nor employment is arrayed symmetrically on either side of Yonge St., as is often supposed, but is inclined to the west of Yonge.

While the map should not be used to infer that people invariably are linked to their nearest job concentration — many travel far beyond — it does show which broad sectors have either a net surplus or a shortage of workers.

In the peak hours, traffic converges strongly on the shaded areas (job concentrations).

HOME AND WORK



Fig. 22

PRODUCTION

Contrasting with the wide dispersal of other forms of land use, the region's industrial areas are relatively few in number but large in extent. Their character changes with increasing distance from town or city centre. The range is illustrated by four examples:

- The steel industries of the Hamilton waterfront, where shipping access for bulk raw materials was a decisive factor.
- The factories of older Toronto — multi-storeyed, closely-spaced and rail-oriented, encircling dense residential areas (which initially provided the work force).
- Postwar industry in suburban Rexdale, comprising single-storey plants with lots of adjoining space for expansion, landscaping and employee parking.
- The typical extractive industry on moraine or escarpment, sending out heavy tonnages of sand, pre-mixed concrete or other construction materials.

While there are basic or dominant single industries at Hamilton, Oakville and Oshawa, the region's manufacturing areas generally consist of diverse plants in light to medium-heavy categories, not tied to reliance on a single mode of heavy transportation. Most of the developing estates afford connections to both major road and rail facilities.

Responding to the direction of markets and major transportation centres — such as Toronto International Airport — the historic westerly bias of industry within Toronto is repeated at the metropolitan and regional scales.

The industrial areas yield high volumes of vehicular traffic since:

- the groupings are generally large
- the use of automobiles by employees is high
- truck traffic is superimposed



10
2

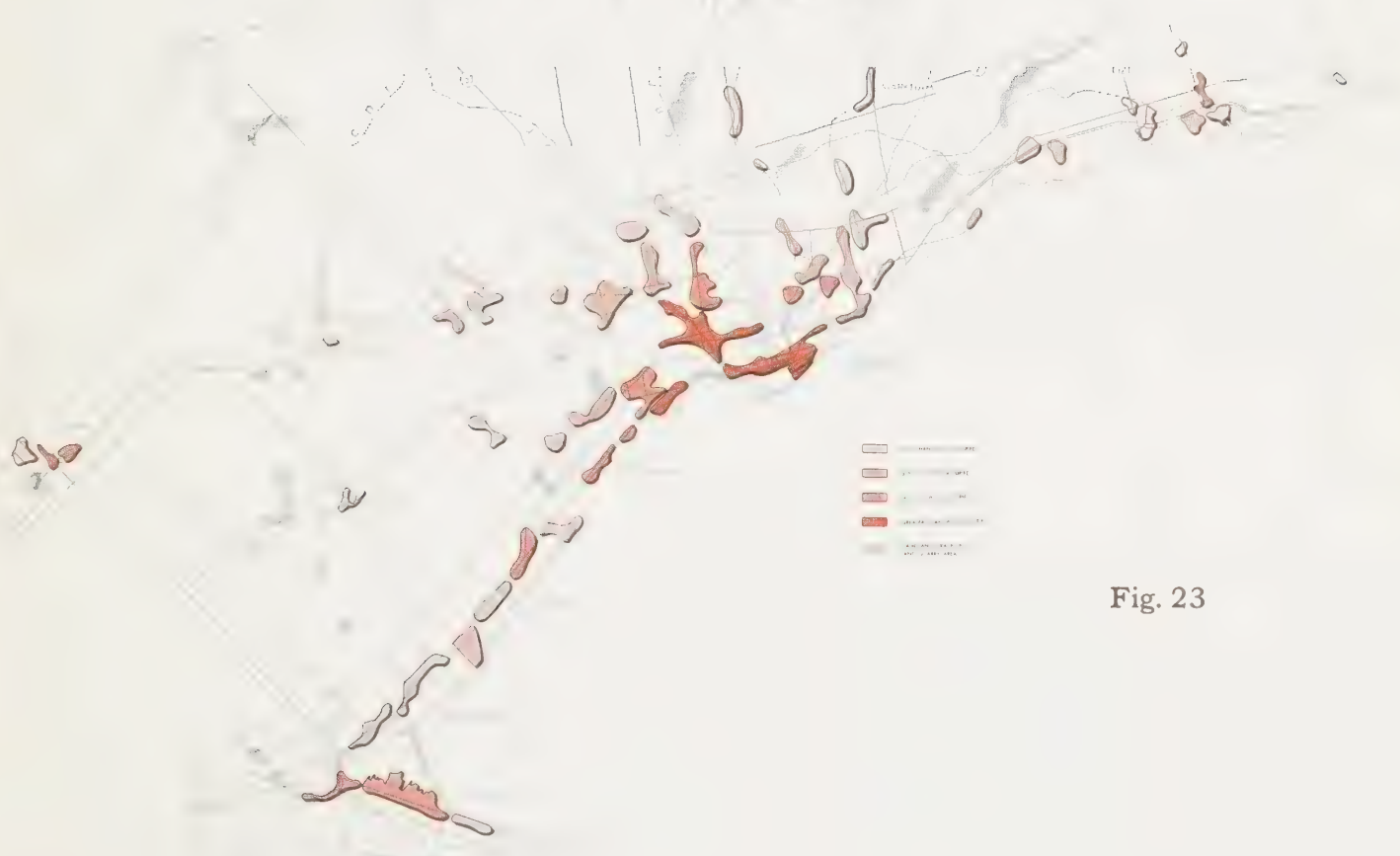


Fig. 23

The region's industrial areas are closely linked to road and rail facilities.

SHOPPING AND SERVICES

People travel further to use the widely-spaced diversified commercial centres of the newer suburbs.



Fig. 24

DOWNTOWN TORONTO



Fig. 25

Within the regional core, related activities are clustered in major functional groupings.

Most of those specialized activities which sustain Toronto's role as a regional, provincial, national and international centre are located downtown in a compact, high-density arrangement.

The downtown complex is the region's heaviest employment concentration—140,000 jobs in the area shown. To handle the massive movements of downtown workers and visitors, a choice of high-capacity facilities is available.

The pattern of retail and service establishments in the region is formed of two distinct components:

- In older urban areas, stores line the main thoroughfares. Sections of these long strips, usually near intersections of transit routes, have emerged eventually as commercial centres. On the facing map, these centres are symbolized by squares, except for the downtown core areas of Toronto and Hamilton, which have special roles.
- In the new suburbs, the pattern has emerged of planned shopping centres set relatively far apart at commanding points on the network of arterial roads. On the map, these centres are symbolized by circles. They are characterized by large parking areas, and are geared to shopping by car, although some centres have helped attract apartment concentrations and a significant "walk-in" trade.

People tend now to shop less frequently, and seek places offering choice and range. Traffic converging on shopping areas reaches its peak evenings and Saturdays, with local exceptions.



LOCAL GOVERNMENT

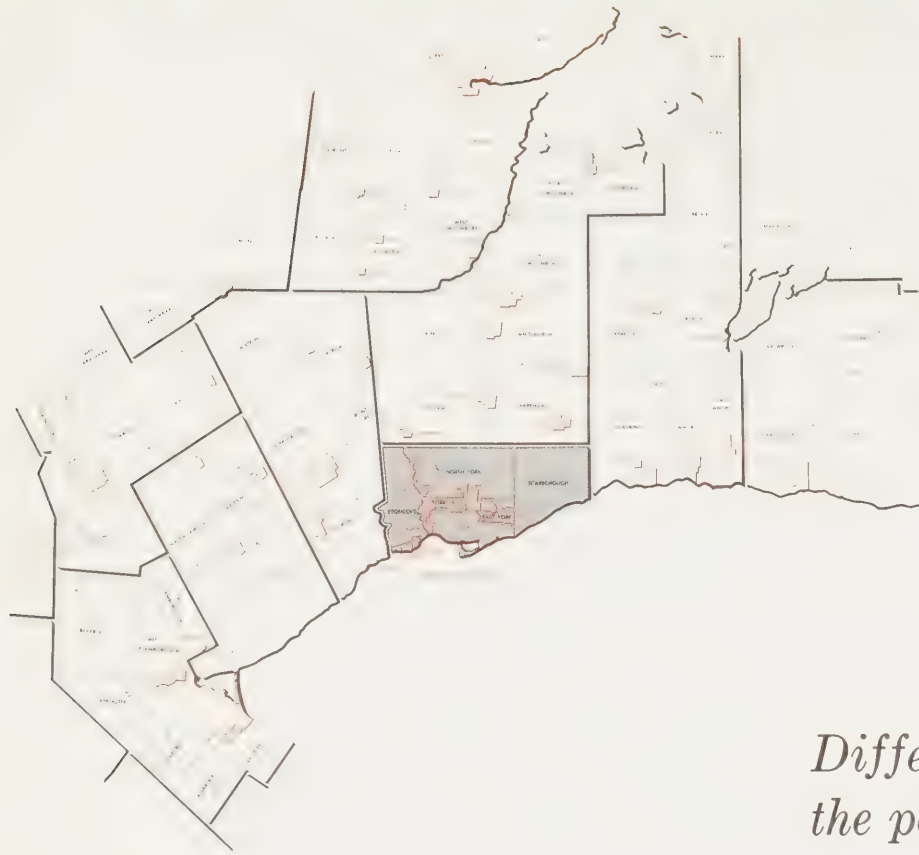


Fig. 26

Different sized units form the pattern of local government.

Six distinct classes of incorporated municipalities are included in the MTARTS region — villages, towns, cities, townships, counties and Metropolitan Toronto. In total, they comprise 95 different units, and range in size through three levels.

The nine counties represented in the region are largest, covering areas of 400 square miles and over.

The townships are next in size and average about 100 square miles. Many townships in this region are undergoing a changeover in character from rural to urban.

The urban municipalities are smallest (up to 80 square miles) while being the most complex in character and concentrated in activity. Metropolitan Toronto is in a special category, being an urban federation of 13 local municipalities.

These municipalities have the power to control the use of land, build roads, authorize transit systems, and in many ways to affect and control local transportation facilities. Most regional travel, however, extends beyond the limits of any one municipality.

In order to show broad variations in conditions within the region, a system of analysis units has been developed.

To aid the presentation in the following chapters of trends and travel characteristics on a comparative geographic basis, the region has been divided into a number of large zones. Each zone is shaped so as to contain areas which are at a similar stage of growth and which have the same order of working relationship with the main employment centres. Within these limits, the areas are based on existing statistical boundaries.

Each of the ten primary analysis areas either forms a broad ring encircling Toronto or encloses the other principal cities.

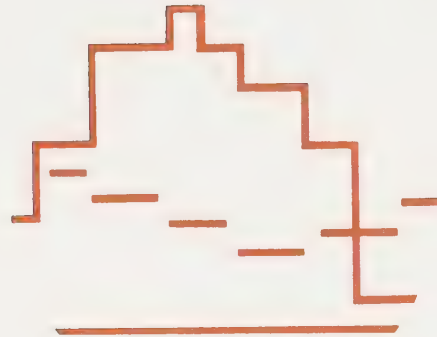
The 24 secondary analysis sectors further divide the primary rings to enable directional characteristics to be shown.

REGIONAL ANALYSIS UNITS



Fig. 27

Current Trends



Chapter 4

*The Changing Nature and
Structure of the Region*

HOUSING DEMAND



Fig. 28

In the eight year period 1956-1964 the population increase of 745,000 distributed itself throughout the region. Largest increases occurred in those suburbs where open land was available for large-scale subdivision. Many other areas gained also, by infilling, apartment construction, or family growth. Only in the core was there a decrease.

The number of new dwelling units (about 200,000) which were needed to house the extra population reflects a significant long term trend. A persistent decline in average household size has, over the past century, almost *doubled* the number of housing units needed to accommodate the same number of people (Fig. 29). Reasons include a larger proportion of small households consisting of elderly persons, single persons or childless couples.

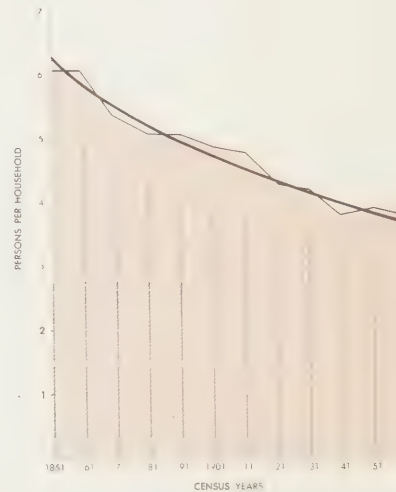


Fig. 29

Changing age structure (Fig. 30) implies a shift of emphasis in travel needs. An increasing quota of young people foretells additional work trips from home and, later, a surge of family formation and housing demand.

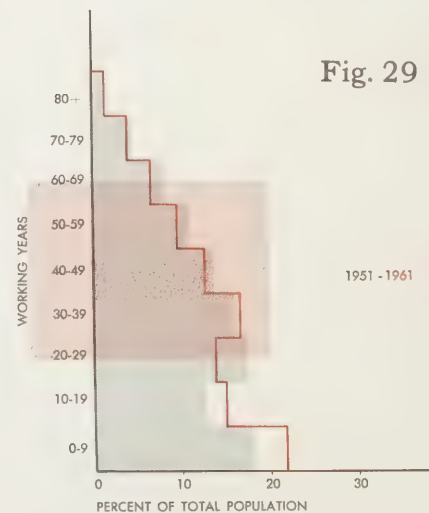
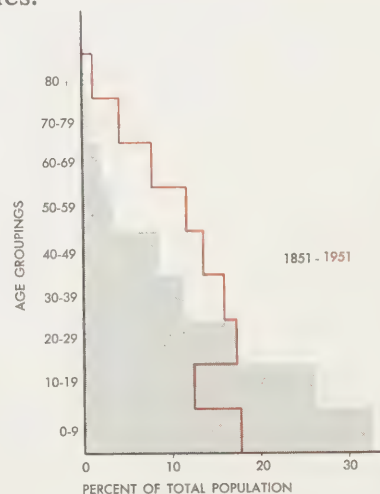


Fig. 30



HOUSING TYPES

Per-capita need for urban land has fluctuated with changing housing styles.

The spacing or density of residences, as of all activities, has important consequences for transportation and other linear services. There have been marked changes in housing form through the years.

With increasing car ownership and mobility, interest in the compact town house of the early public transportation city declined and the space-consuming suburban dwelling became the popular choice.

In turn, rising costs of serviced suburban land and transportation have acted to modify this trend, in recent years, in favour of a range of different housing types at various densities, and the redevelopment of many inner areas at higher densities.

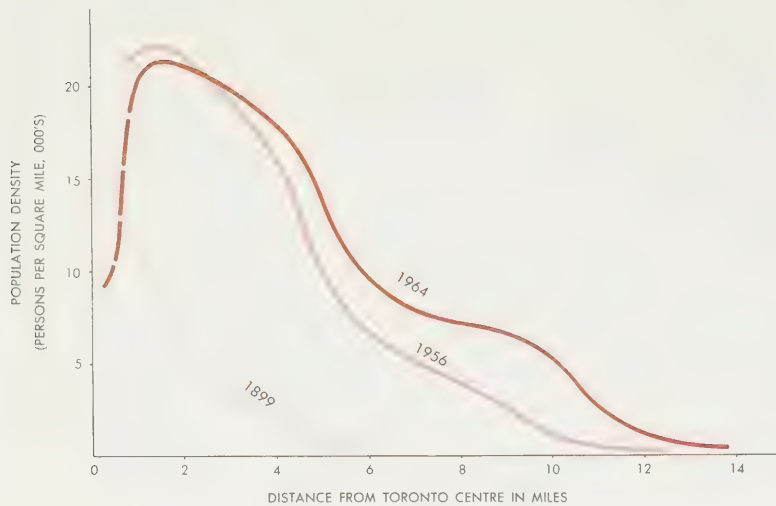


Fig. 31

THE APARTMENT WAVE

While other kinds of housing increased 13% between 1958 and 1964, apartment units increased 107%.



The wave of post-war apartments has raised the density profile of all the lakeshore communities — most spectacularly in greater Toronto (Fig. 31) and Hamilton. In those other regional cities where the travel time problem is less acute, apartment development has not occurred to the same extent.

There is great transportation significance in higher densities, especially if these densities take the form of concentrations around strong service facilities. In these conditions, transit in particular is enabled to offer more attractive levels of service.

If all the apartment units built in Metropolitan Toronto in the past 10 years had been single family detached dwellings instead, at least 20 additional square miles of land would have been required, with corresponding increases in length of publicly provided services and facilities, and of trips.

Until the fifties, apartments in the region were confined to a few well-separated locations in Hamilton and Toronto, most notably in Toronto's northwest sector. The spectacular apartment boom of the fifties then strongly reflected the improvement in northern access provided by the Yonge St. subway. In recent years, apartment construction has spread extensively, first on arterial roads throughout the suburbs (see prominent Keele and Lawrence East alignments on the map) and later in outlying centres like Oakville, Richmond Hill and Whitby.

Current municipal development control permits and encourages a variety of housing types in most districts; but apartment activity is particularly strong in the northern reaches of Metropolitan Toronto, flanking Hwy. 401, Bathurst St., and the Don Valley Parkway.

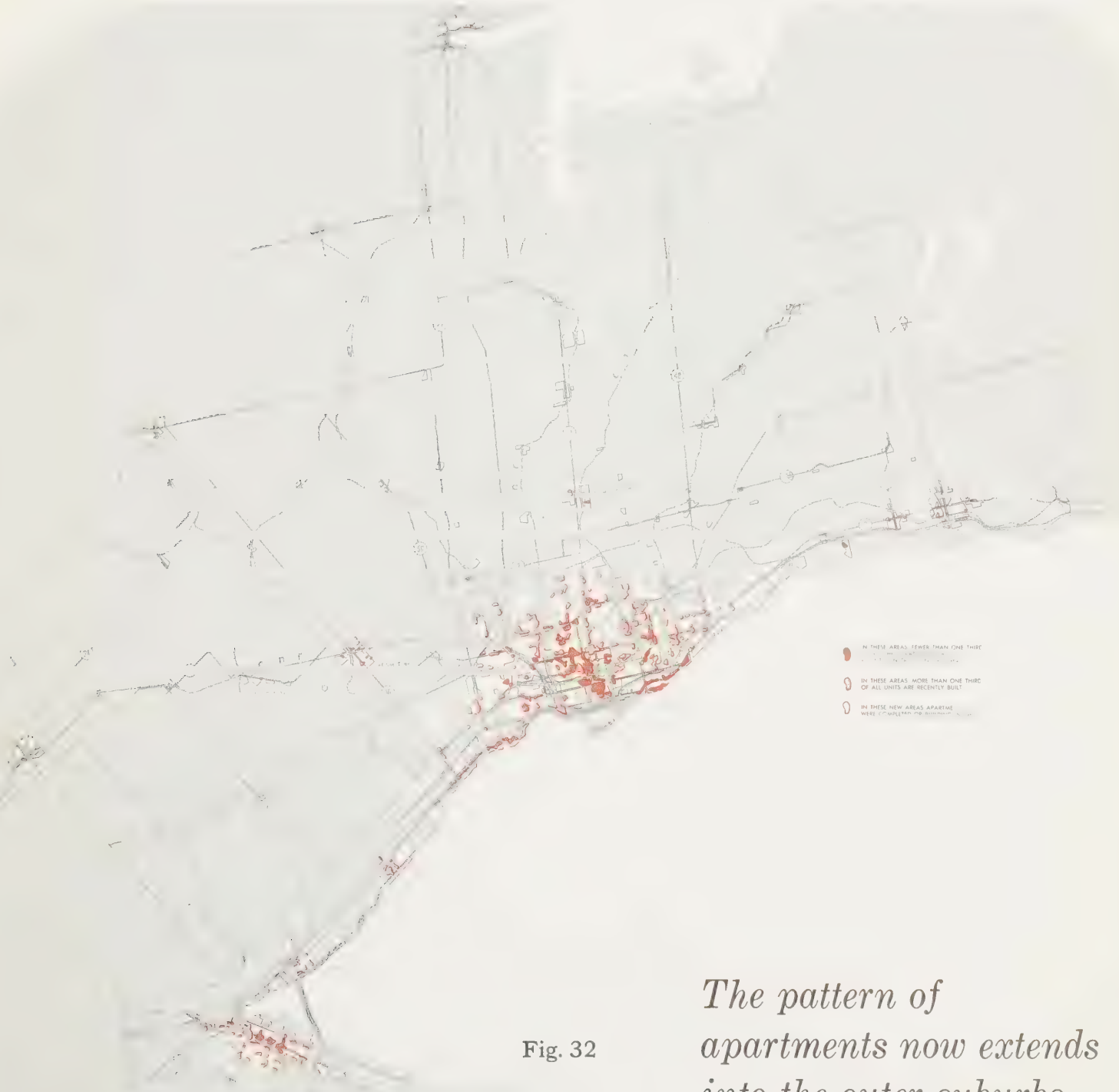
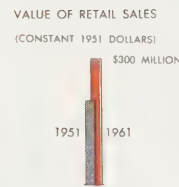


Fig. 32

*The pattern of
apartments now extends
into the outer suburbs.*



Fig. 33



TRENDS IN TRADE

Shopping activity followed people to the suburbs.

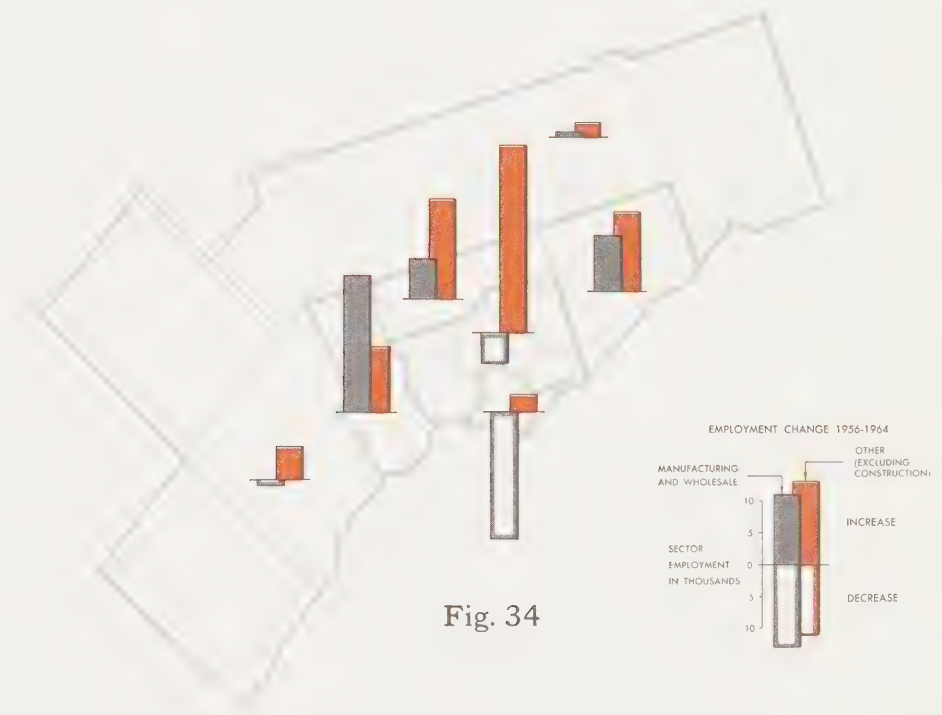
The large increases in value of retail sales in the population growth areas reflect an adjustment to the expanding market by the construction of suburban outlets (see also Fig. 24).

A rising standard of living meanwhile is creating a larger market for specialized goods and services. Downtown's advantage of central location has enabled it to serve most efficiently this specialized market and to survive the loss of much regular shopping.

The tendency over all has been toward ever-larger individual centres drawing shoppers from larger areas. A ring of very large centres, located necessarily on high-capacity transportation facilities, has emerged. Fortunately, shopping peaks do not coincide with other peaks of demand on these facilities.

Industries and services are expanding and regrouping in response to changing functional requirements.

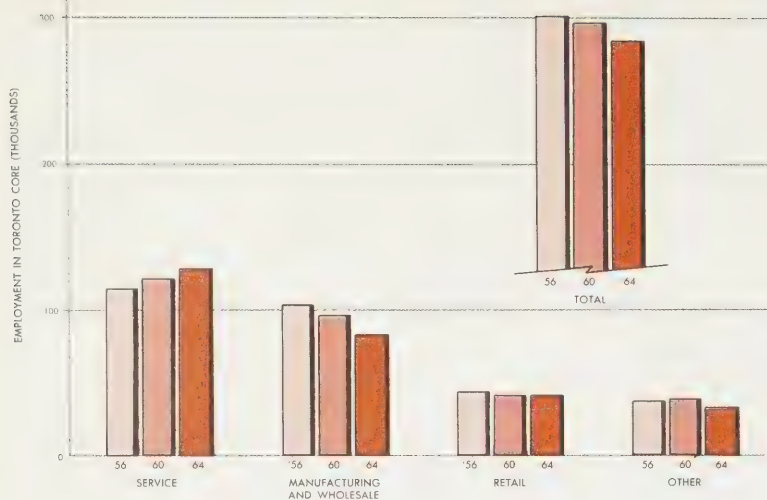
JOBS ARE MOVING



In the older centrally located industrial areas, space for industrial expansion has become either very limited or nonexistent.

New industries and wholesale establishments have therefore located mainly in the more spacious suburban estates, and a number of older industries have been pressed by their expanding space requirements for plant extension and staff parking, to move out from congested central locations.

The dispersal of industrial growth was reflected in a substantial decline of industrial employment in Toronto's core area between 1956 and 1964. This decline, however, was in part offset by expansion of other kinds of employment, as there were, in the Metropolitan area as a whole, seven new non-manufacturing jobs for each new manufacturing one.



In the Toronto core area, the recent trend has been increasingly toward specialized regional and provincial functions. Jobs in the service sector increased, while industrial and retail employment declined.

Fig. 35

CHANGE AND TRAFFIC IN THE REGION'S CENTRE



The changing function of the region's centre is altering the number, kind and timing of journeys to the Toronto core. This is evident from the records of traffic crossing two cordons around the centre (Fig. 36).

Fig. 36

The number of persons entering and leaving downtown has stabilized at about 700,000 daily. The number entering and leaving the much larger area enclosed by the Intermediate Cordon continues to rise, however. While the Toronto metropolitan area is a relatively centralized unit, increase in volumes of travel is greatest in the peripheral areas.



Fig. 37

The transit share of traffic into the centre declined, but is still higher than pre-war.

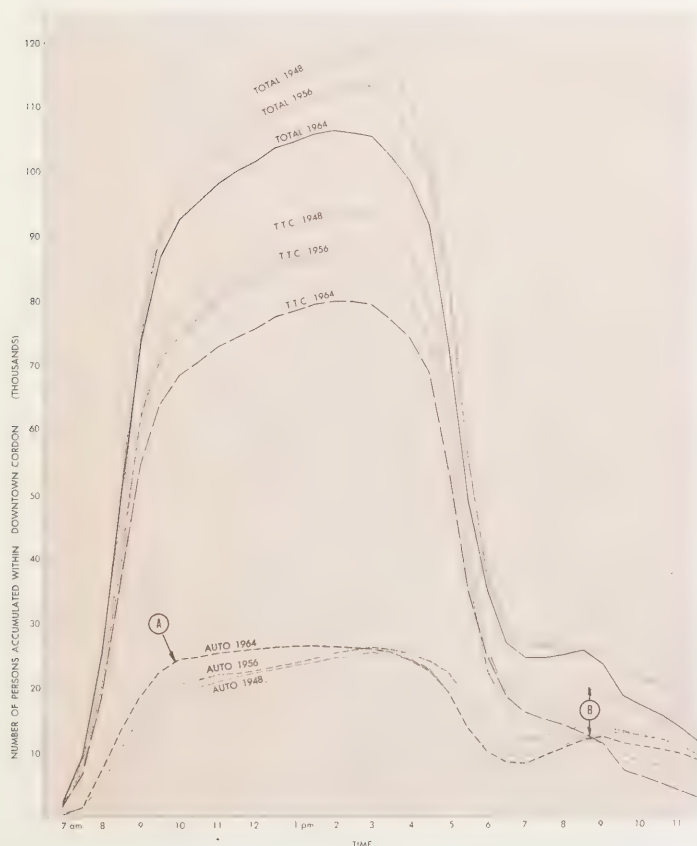


Fig. 38

As automobile ownership increased and as improved road facilities were constructed, the number of people entering downtown by car in the morning rush increased (point 'A' on graph). However, the subsequent buildup of arrivals by car — evident in both 1948 and 1956 — was suppressed in 1964, likely due to parking capacity limitations.

A noticeable drop in transit riding to the downtown area in the evening is evident between 1948 and 1956 (line 'B' on graph).

A decline since 1948 in the total number of persons downtown at the mid-afternoon peak of accumulation is consistent with the drop in core area total employment already noted (Fig. 35). However, the 1964 patrons undoubtedly are drawn from a much wider area, and their travel needs in total miles are greater.

New higher-speed facilities have improved commuting times from suburbs to centre, though not in step with outward growth itself.



Fig. 39

Due to the proximity of large cities toward the west — Hamilton, Kitchener, London, for example — good trunk facilities were provided first in that direction. The Queen Elizabeth Way was Canada's first modern divided highway. In 1956, the centre of Toronto was decidedly more accessible by road from the western lakeshore than from other areas at equal distance. This is shown on the map by the westerly bulge in the lesser grey curve.

Recent improvements, such as the opening of the Gardiner Expressway into downtown Toronto, have further enhanced this westerly advantage in travel time, although improvements have been made in other sectors, and still more are planned. In particular, the Yonge Subway gained a large area to the north in 1954, and the Don Valley Parkway to the northeast in 1961.

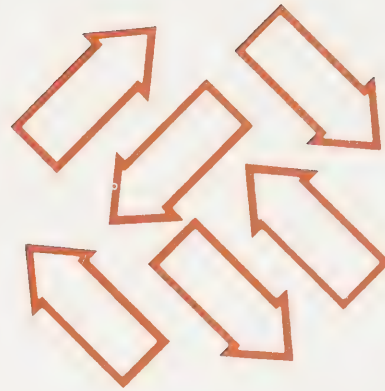
AND ACCESSIBILITY

The price of new housing shows sensitivity to time-distance from downtown.

The areas where population growth took place between 1956 and 1964 — mainly areas of recent housing construction — do not parallel the contours of equal travel time to Toronto centre. Instead, land cost and housing price tend to show a strong correlation with travel time required. The more expensive new housing generally is inside the 30-minute auto contour shown, the less expensive is outside it.



Travel Demand



Chapter 5

*The Purpose, Timing, Direction,
and Intensity of 1964 Travel*

FOUR MILLION TRIPS PER DAY

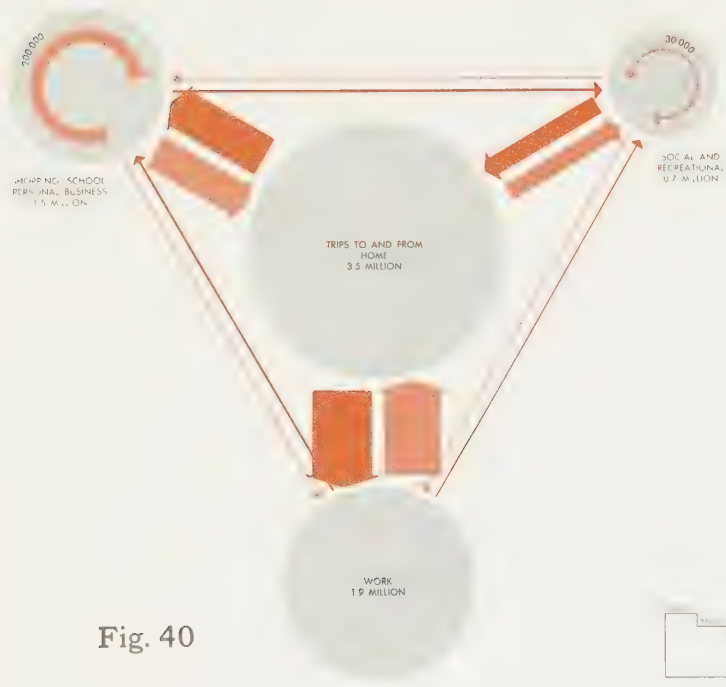


Fig. 40

In the region, 90 per cent of nearly four million trips on a weekday connect to home, and half of these are work trips.

Trips are undertaken for a variety of purposes, and link different activities which are grouped above into four categories.

Daily trips from home to work and return are seen to dominate the picture. This reflects the fact that there are 1.3 workers on the average in each of the region's households. School trips, also repetitive, are almost as numerous as work trips. In this diagram, however, only school trips made in a vehicle are included.

Volumes shown for the other travel purposes represent the daily sum of intermittent or occasional travel, involving large groups of people whose composition changes from day to day.

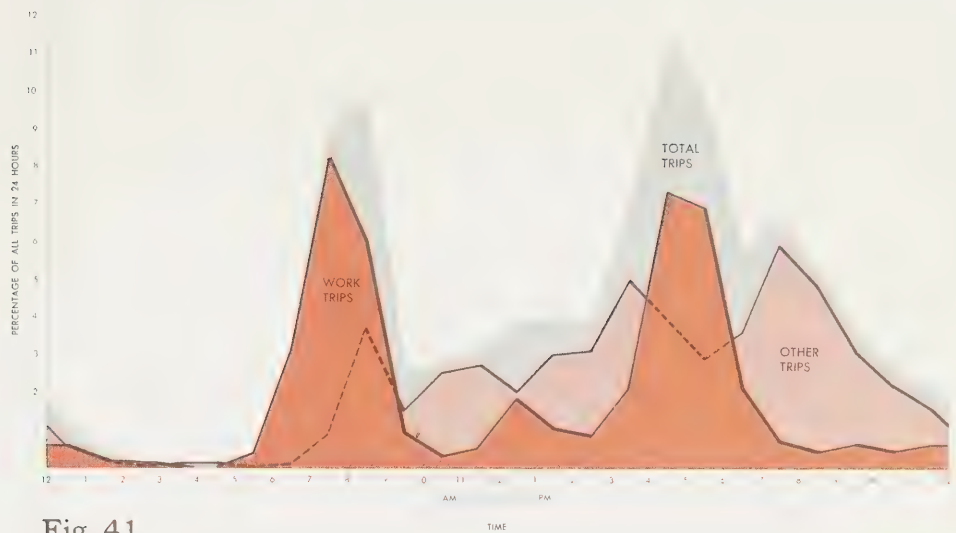


Fig. 41

Forty per cent of all trips are concentrated within four of the 24 hours.

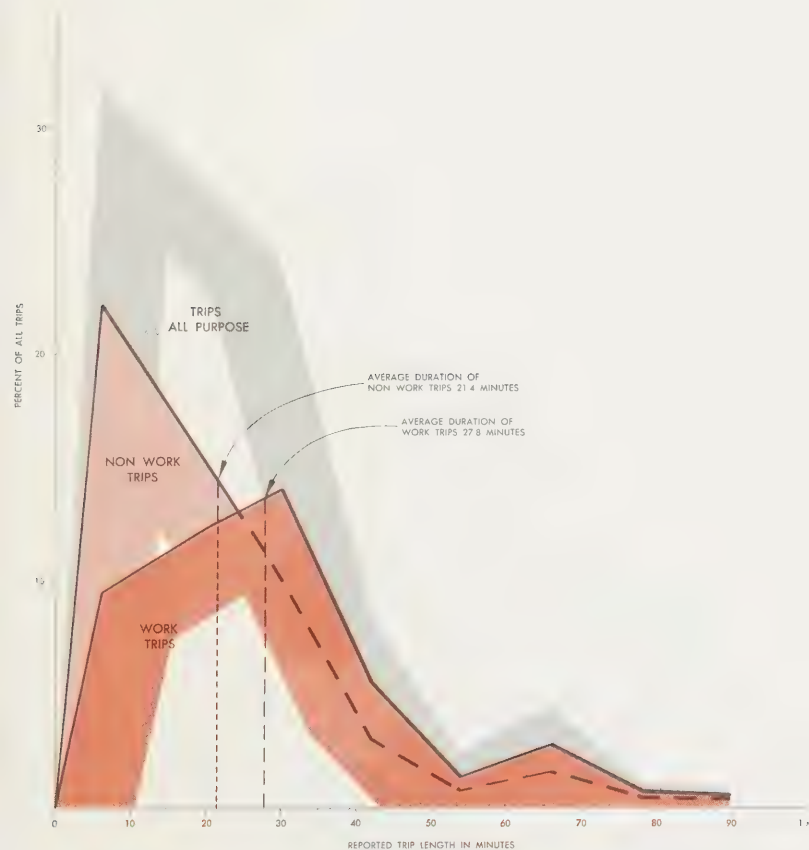
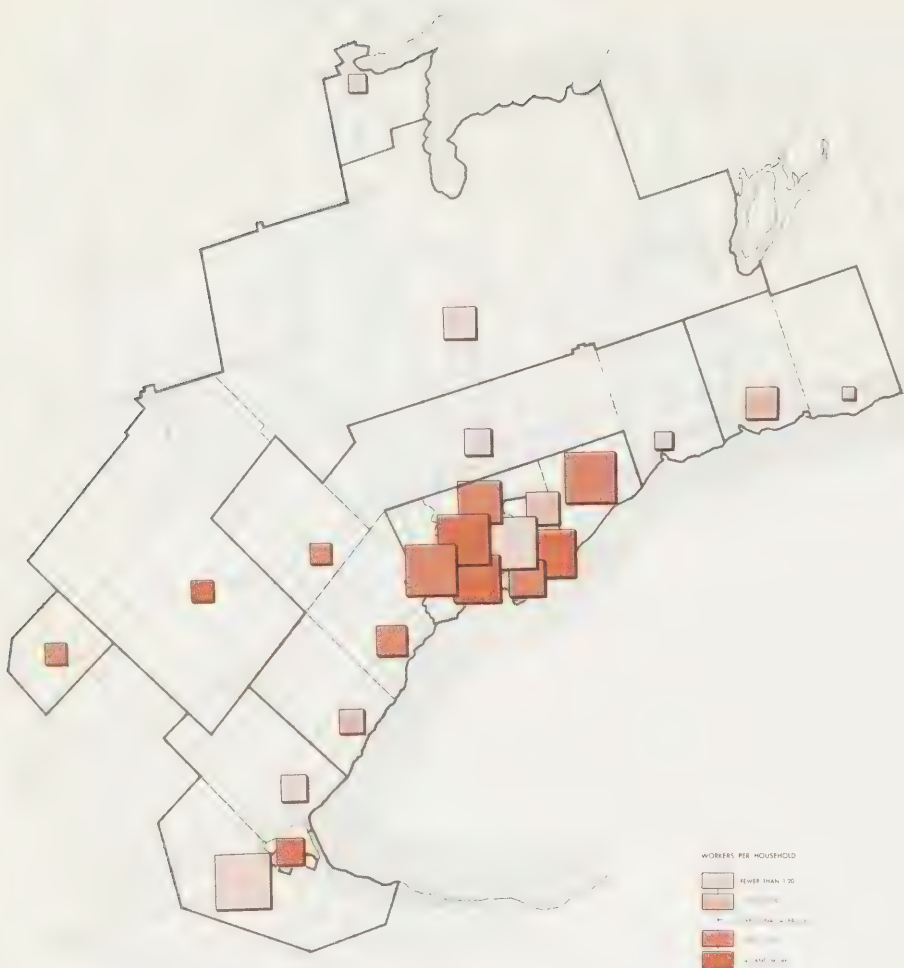


Fig. 42

The average hourly rate of trip-making more than doubles during morning and evening rush periods, due to the coincidence of work trips. This peaking of demand is a characteristic of urban-centred transportation networks which makes the elimination of all congestion very costly. Twice-daily peaking is especially severe in the approaches to large employment concentrations. Other areas may have peaks at other times, corresponding to the evening surge of travel for shopping and social purposes, shown on the diagram with the rise of the “other trips” curve after 7 p.m.

Two million hours are spent travelling each day by the residents of the region, more than half of it on trips to and from work. For most people, the work trip is longer in duration than their other trips. Half an hour is usual, but for 80,000 workers it is an hour or more.

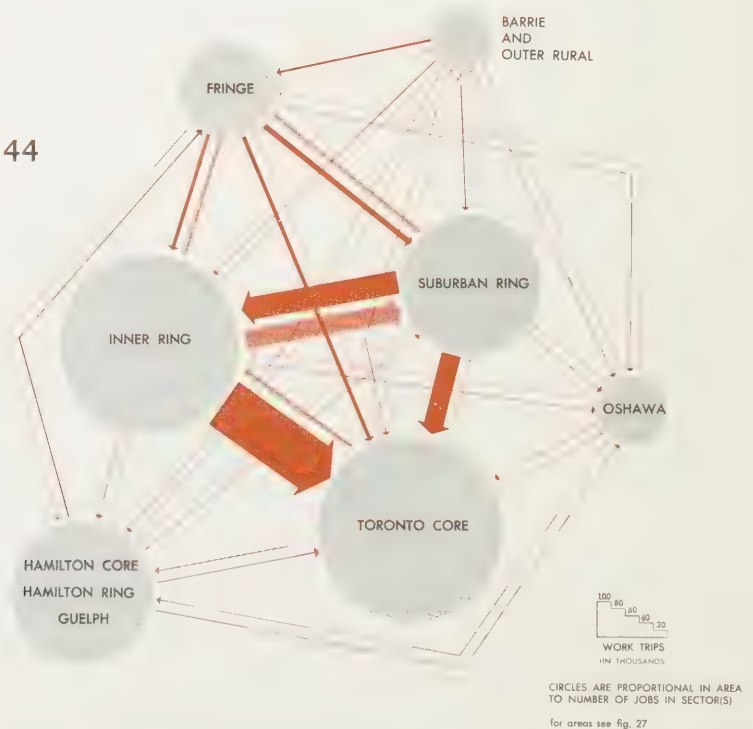


Where there are more workers in each household, the demand for peak period transportation is intensified. This is characteristic of the metropolitan inner areas, as shown on this map, where each square is proportional in area to the number of households, and the heavier colours indicate a higher worker ratio.

Fig. 43

INTERCHANGE OF WORKERS

Fig. 44



Intra-regional daily flows of workers show the effect of separation of home and work, and of the exercise of job choice.

In the Toronto and Hamilton core areas, where almost one-third and one-tenth respectively of all the region's employment is concentrated, there are more job opportunities than workers resident (Fig. 45). The situation is reversed in the suburbs. This imbalance is reflected in an excess of inbound over outbound movements of workers, considering the volumes of trips exchanged by the respective areas (Fig. 44).

There are 150,000 work trips to the Toronto Core from the Inner Ring, and 60,000 from the Suburban Ring. The Inner and Suburban Rings exchange roughly an equal number of workers, around 60,000.

The number of workers moving between the various areas is much larger than would be needed to theoretically balance work force and jobs available by the shortest mass transfers. This is because adjacent work and residence areas are not always compatible, and because many workers travel greater distances of necessity or by choice.

The perimeter cities are relatively self-contained in respect of jobs and workers.



Fig. 45

There is a clear pattern of variation in length of trip incurred by residents of the various sectors of the region. Greatest variation is shown in the case of the trip from home to work. This reflects sector differences in travel conditions affecting speed, which differences are greater at peak periods. It also reflects the relative distribution of homes and jobs, and job selectivity.

On the map Fig. 46, coloured bars mark areas whose residents incur longer-than-average travel times getting to work and their other activities than do residents of the region as a whole. These longer-trip areas are concentrated around Metropolitan Toronto, and particularly to the north and east.

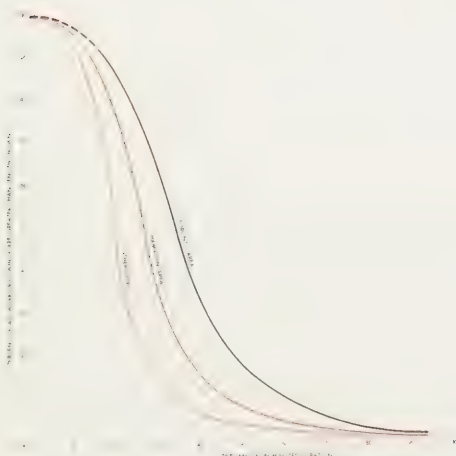


Fig. 46

TRAVEL TIME VARIATIONS

The worker in Toronto spends twice as much time travelling as his counterpart in the region's other metropolitan areas.

Fig. 47





Daily and seasonal variations modify the basic pattern.

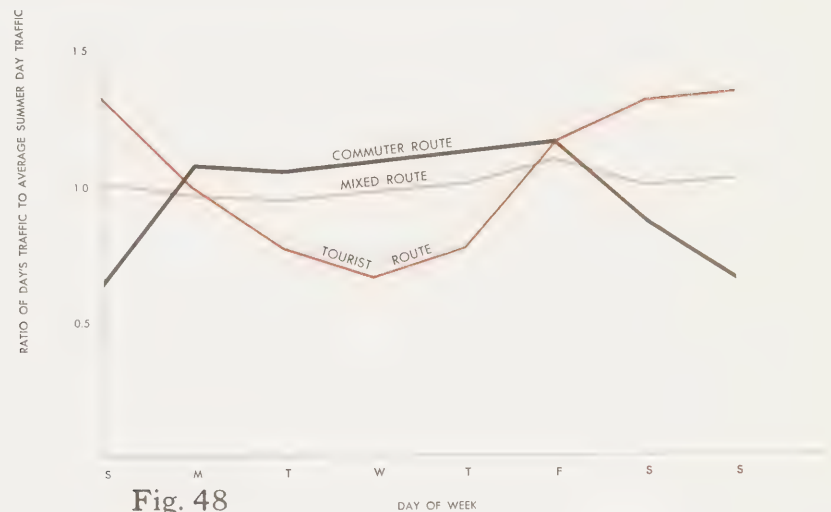


Fig. 48

Up to this point, the report has dealt mostly with the conditions of *peak* period travel, and with the work trip in particular. This combination is the critical one in most cases, but not in all. The convergence of shopping trips on large retail centres, of truck traffic on industrial areas and freight terminals, and of summer recreational traffic on routes leading to resort areas are examples of specialized demand reaching a peak in particular localities at particular times. In some localities, these peaks may be larger than that due to work trips, or may overlap and intensify the work trip peak.

CORRIDORS OF DEMAND

Peak travel demand focuses strongly on the urban centres.

In Fig 49, the gross pattern of peak period demand is represented by a map of composite trip desire lines. The width of the various links is a direct indication of their probable usage *if* people were free to move over such an arbitrary link system at uniform speed, instead of over the real network of facilities, with its various restraints and sometimes indirect routing.



Fig. 49

This map shows the overwhelming weight of movement within and near Metropolitan Toronto, relative to other parts of the region, and how the western lakeshore is the most strongly defined of several radial corridors. The other cities show a relatively small scale of movement of the type selected (medium and long-distance commuting trips).

This map highlights a problem aspect of large urban areas. The scale of demand for transportation facilities increases not merely in proportion to population. As population grows, trips become longer and the total travel mileage is compounded.



Fig. 50

In Metro, strong axial demand but no symmetry.

Fig. 50 shows the trip desire pattern of the Metropolitan Toronto area in greater detail. Again, none of the solid lines represent real facilities.

The technique enables the reader to visualize where ideal routing might differ from the often longer practical paths imposed by the present road and transit systems, and which generally conform to a rectangular grid.

The map shows demand focused strongly on the centre, mainly along north-south, east-west axes, of which the easterly leg is abruptly curtailed by the upturn of the Scarborough shoreline. Demand in the northwest sector within a 10-mile range is strong but well diffused. The northeast by contrast exhibits a strong concentration of demand along a particular line. The massive crosstown movement, so evident to travellers on Hwy. 401, is not apparent as pure demand.

These two maps depict patterns of demand in the morning rush period, when work trips predominate. Other maps, related to periods of the day when other kinds of trips predominate, would show both different and important patterns.

HOUSEHOLD TRAVEL POTENTIAL

Among the household characteristics which, in the mass, help determine the form of a given area's response to travel opportunities, level of income and of car ownership are important. The two do not necessarily go together.

Surveys show that more trips in total are made from areas having higher car ownership ratios.



Car ownership influences the amount and mode of travel from a residential area.

Fig. 51

In the region, higher than average ratios of car ownership are to be found mainly in the outer suburban areas. In some cases, it relates to higher income; in others to the number of workers in the household, to absence of transit, or lack of nearby employment.

The lowest ratios are to be found in the inner metropolitan areas, reflecting lower income in some older parts, and rationed garage space with good transit service in newer apartment concentrations.

Car ownership ratios continue to increase, nationally and in the region.

During rush hours, two-thirds of all trips to the Toronto core are made using public transportation. This reflects the advantages of mass transportation in serving intensive corridors of trip demand toward concentrated destinations.

If trips which began in the morning peak period are classified at their Analysis Sector of origin according to the mode used, a clear pattern emerges. In the high-density inner areas, transit gains the major share. In the suburbs and perimeter cities where a moderate level of transit service is offered, the automobile nevertheless caters to the majority of trips. Elsewhere there is almost complete reliance on the car.

Transportation imbalance in low-density areas has significance implications for the future, as urban growth is most likely to assume a more dispersed form.

CHOICE OF TRANSPORTATION

Heaviest transit usage is concentrated in Toronto centre.

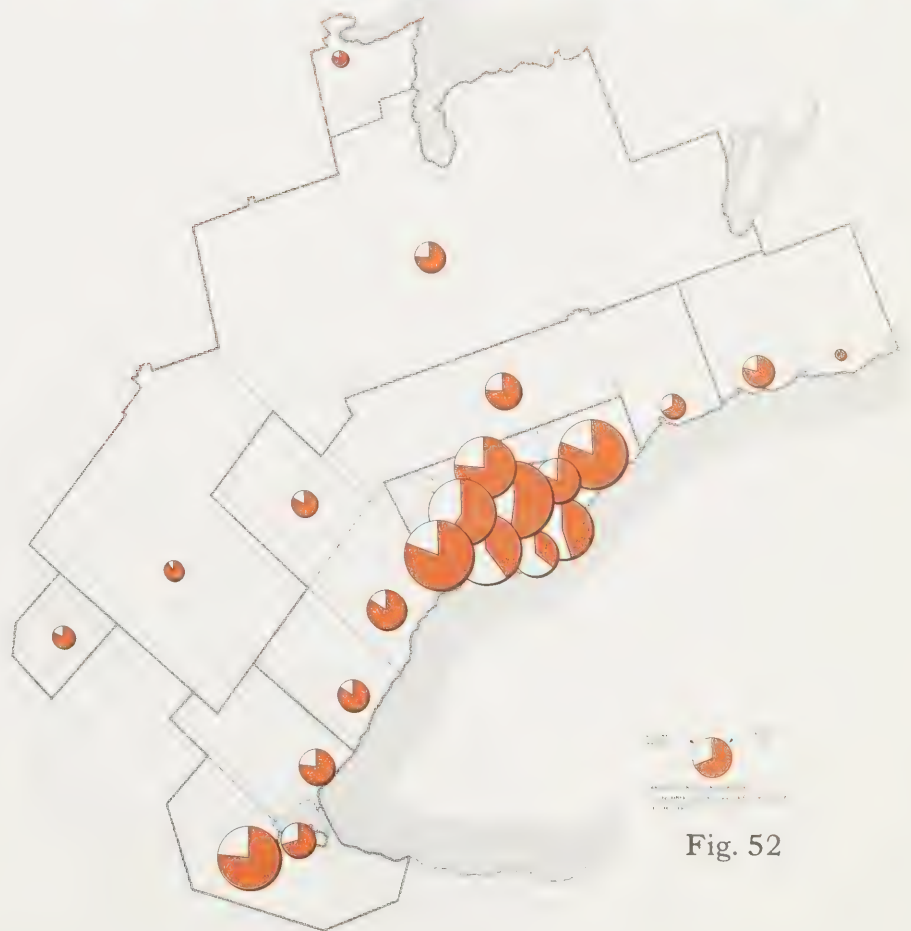


Fig. 52



Fig. 53

TRAFFIC FLOW

Lines of demand are redistributed and grouped according first to the individual rider's choice of the means of travel (Fig. 52), and then to his choice of route from the network available.

For road users, the heavier traffic volumes are concentrated on expressways, whose superior service characteristics attract trips from very wide corridors of demand.

In contrast to the region-wide pattern, which is highly differentiated and centralized (Fig. 53), the map of vehicle flows on arterial roads in Metropolitan Toronto shows a remarkably even distribution of the load among alternative routes (Fig. 54). This uniformity of flows partly reflects a fairly uniform suburban spread of traffic generating activities, but it also reflects the ability of the motor vehicle to seek its own path to avoid capacity restraint and congestion. For this reason, plus the attractive effect of expressways, the flow pattern may fail to identify the true lines of intensive demand (Fig. 50) or the areas whose trips are directed strongly to one particular destination zone.

A map of volumes of transit passengers would show a greater degree of concentration on central areas than do these maps of 24-hour road vehicle flows.



The existing network reshapes the pattern of demand.



Fig. 54

CONCLUSIONS

In this report, an attempt has been made to describe the salient regional features which affect transportation, and some of the influences which are working to enlarge or modify the existing patterns of development and movement. The evidence points to certain conclusions:

- THE REGION'S LOCATION ASSURES A CENTRAL ROLE AND CONTINUED HIGH GROWTH RATE.

The region is part of a fast-growing urban belt stretching down the Great Lakes from Chicago to Montreal. The region's diverse roles, and its important functions nationally and internationally, assure its participation in gains by almost any sector of the economy. The wide range and accessibility of market, employment and cultural opportunities seems likely to continue to attract an increasing share of new establishments and migrants.

Because of the relationship between metropolitan size and urban travel problems, it would seem wise to take an expansive view of growth prospects when considering the need for policies in respect to urban transportation in this region.

Present trends suggest that growth will be increasingly diverse in character, with central service functions increasingly important, and with higher skills in increasing demand.

- THERE IS AN ABSENCE OF SEVERE RESTRAINTS TO THE DISPERSION OF FUTURE GROWTH IN THE REGION.

The generally flat regional landform places few limitations on the possible directions of urban growth, although Lake Ontario continues to exert a strong linear influence through the economics of water supply and sewage disposal.

In earlier times, industry was restricted to locations served by heavy transportation and site power. In recent times, this dependence has diminished. The industries of the sixties have a high degree of locational adaptability. Assuming widespread road and energy networks, water supply and waste disposal, the urban shape is relatively flexible.

- TRANSPORTATION EXERTS A MAJOR INFLUENCE ON THE FORM OF GROWTH.

In the past, emergence of new forms of transportation had an impact on the growth pattern, whether viewed at the regional scale, (that is, considering the relative rates of growth of the region's various urban groupings) or at the local scale (considering how the shape of one particular urban area has evolved).

Railways had a strong influence on the regional form in the 19th Century, giving it a particular focus, while in the last two decades the motor vehicle has helped create a markedly different urban form.

- NEW GROWTH TAKES THE NOW WELL-ESTABLISHED FORM OF SUBURBS DESIGNED EXPRESSLY FOR AUTOMOBILE USE.

The metropolitan parts of the region in 1964 each consist of two distinctive, roughly concentric zones.

- the compact inner areas, transit dominated, focusing on concentrated central employment and linear shopping;
- the extensive postwar suburban belt, automobile oriented, containing widely dispersed employment areas and comprehensive shopping and service centres with off-street parking.

In terms of area, population and future significance, the second category is now overtaking the first.

- CHANGING PATTERNS OF HOUSING — APARTMENTS NOW A MAJOR FACTOR.

The traditional Ontario pattern of individual housing with a back yard of one's own has been considerably modified by recent apartment construction. The rising incidence of multiple forms of housing reflects social changes as well as a reaction to increasing land costs and travel distances. Apartment redevelopment of older areas has relieved some of the pressure on the suburbs, while a controlled variety of housing in the suburbs themselves is yielding higher suburban densities. The extravagant consumption of land by the ubiquitous subdivisions of the early fifties has been moderated, with some reduction in costs of linear services of all kinds, including transportation. Despite apartment construction, the demolition of older housing and reduction of overcrowding has led to static or decreasing densities in parts of the central city. The trend therefore is towards an equalizing of city and suburban densities.

- THE MAIN URBAN USES OF LAND ARE STRONGLY KEYED TO TRANSPORTATION FACILITIES.

The report shows the strong interaction between the static uses of land and the fluid pattern of transportation. Firstly, residential distribution is a major determinant of the patterns of travel and the choice of transportation. Secondly, the locating of industry adjacent to primary transportation is advantageous both to serve freight movements and to protect residential areas from heavy traffic. Thirdly, commercial areas today are located and designed to suit the needs for vehicular access. Therefore, three main urban uses of land — housing, industrial, and retail service centres — are shown to be strongly keyed to transportation facilities, and through transportation to one another. This stresses the need for the effective integration of the processes of transportation planning and land use planning and control.

- TRANSIT IS MOST EFFECTIVE IN THE CENTRAL AREAS.

Trips from home to work provide the heaviest, most highly-peaked component of travel demand. Work trips additionally are longest in duration, particularly in the bigger centres. They tend to accumulate in central areas, not only because of the converging weight of centrally directed trips but also because of the complex interlacing of trips destined across and beyond the central areas. On the other hand, there are many non-work trips which show a different pattern and which cannot be catered to in the same manner as work trips.

- TRIPS TO WORK ARE DOMINANT, PILING UP IN CENTRAL AREAS.

The high residential and trip densities of the central area permit transit service to be frequent, attractive and economic, particularly in the direction of central employment. The transit share of all-day traffic toward the centre has declined since 1945, but is still a constant major proportion in the critical peak hours. Conversely, automobiles are most effective to non-central destinations, and dominate travel in off-peak hours.

The foregoing overview of the region and its historic travel relationships leads directly into the substantive operations of the Transportation Study — the forecasting of regional growth patterns for both the programmed future and the distant turn of the century, the planning of transportation facilities to meet travel demand and the fitting of transportation systems to alternative patterns of growth, and finally the putting together of an overall Provincial transportation policy. The present report is intended to clarify relationships between land use and transportation prior to a review of the foregoing technical stages of projecting future demand for transportation systems. These study processes are now well advanced and this report illustrates a number of considerations influencing the subsequent studies in various ways:

The form of future growth — The shape and mix of development continually changes. The recent moderating effect of a higher proportion of apartments on land consumption and therefore on the spacing of activities has important transportation implications, but there is no certainty that the present level of acceptability of new rented accommodation at high densities will be sustained. Increases in the family formation rate are expected, leading to a later surge of demand for individual homes. In turn car ownership rates will be affected by housing trends — decreasing if apartment construction predominates, and increasing with the building of single family houses.

The future role of public transit — The evidence as to whether transit can expand its role along with the growing metropolis is not conclusive. On the one hand, incomes and automobile ownership continue to rise. Growth takes place primarily at the low-density fringe, where the transit yield (per vehicle mile) is low. On the other hand, prospects of large-scale downtown redevelopment plus the compacting of certain new suburban development are all to the advantage of transit. Nevertheless, major long-term trends of dispersed activity and increasing affluence will stimulate greater motor vehicle travel.

Changes in transportation technology — Proposals for mono-rails, hovercraft, hydrofoils, high-speed trains, carveyors and guided automobiles have been suggested but their early local application is not foreseen. On the other hand, improved forms of service on facilities either existing or already planned are a distinct possibility. Among these are buses on expressways, new forms of commuter railway service, and outer parking on mass transit lines.

The influence of changing employment patterns — If the trend to a greater proportion of service employment continues, relatively more jobs will be located in widely dispersed areas. This does not necessarily mean that centralized employment will decline in absolute numbers. If there is a general reduction in hours of work, or an increase in disposable income, the resulting greater amount of leisure activity could well impose different travel patterns, notably increases in off-peak automobile travel to non-central locations.

The development of an orderly regional pattern — The reshaping of the metropolitan area over the past 15 years has strongly reflected the influence of automobile travel. It is necessary to determine the effect of this trend upon the ultimate shape of the region and the forms of transportation needed and used. A new approach to control of development may be needed in order to meet regional objectives for reasonable economy in the provision of transportation services and facilities.

These issues and others are now under detailed study by MTARTS. The consequences of present trends and changes in such trends will influence the process of predicting the amount, location, and character of growth to be expected in the region up to 35 years hence. The effect on transportation demand and on present long-term programs will then be evaluated. Subsequent reports will deal with these aspects.

STATISTICAL APPENDIX

This Appendix brings together some of the detailed material on which the maps and graphs in the report are based. Where the methods used to compile the statistics or develop the maps are not clear from the drawings themselves, the methods are described.

The Appendix is in two main parts — first, there are technical comments about the graphics; second there is a series of supporting statistical tables. Both are in order of appearance of figures in the report.

ABBREVIATIONS

The following abbreviations are used:

CBD	Central Business District.
CMA	Census Metropolitan Area.
CNR	Canadian National Railways.
CPR	Canadian Pacific Railway.
CT	Census Tract.
CTPB	City of Toronto Planning Board.
DBS	Dominion Bureau of Statistics.
DHO	Department of Highways (Ontario).
DMA	Department of Municipal Affairs.
DOT	Department of Transport (Ontario).
HATS	Hamilton Area Transportation Study.
HIS/64	MTPB/MTARTS Home Interview Survey, May-June, 1964.
MTARTS	Metropolitan Toronto and Region Transportation Study.
MTPB	Metropolitan Toronto Planning Board.
MTPA	Metropolitan Toronto Planning Area.
MTTP/64	Report on the Metropolitan Toronto Transportation Plan (December, 1964).
MTOP/59	Metropolitan Toronto Draft Official Plan (1959).
MTOP/65	Metropolitan Toronto Draft Official Plan (1965).
QEW	Queen Elizabeth Way.
SMSA	Standard Metropolitan Statistical Area (U.S.).
TH&B	Toronto, Hamilton and Buffalo Railway.
TRC	Traffic Research Corporation.
TTC	Toronto Transit Commission.
URS	Urban Renewal Study, MTPB.
ZI/64	Inventories by Zone of Households, Population and Employment for May-June 1964, compiled by MTPB and DMA.

NOTES ON GRAPHICS

INTRODUCTION

- 1/The Ontario Government's Commuter Rail Demonstration Project is due to commence in 1967 between Burlington and Dunbarton, by arrangement with Canadian National Railways.

CHAPTER 1. THE REGION

- 2/A more accurate description of the region is obtained by reference to a list of the included municipalities. This is given in *Table 1*. The regional boundary conforms to municipal boundaries as they existed at January 1, 1964, except in the south-west, where it follows the statistical boundary established for the Hamilton Area Transportation Study. This Study was commissioned by the City of Hamilton in 1961, and its boundary bisects five townships.

The open squares on the map represent, in proportion to their size (area), the 1961 populations of those principal urban areas with more than 20,000 people. See *Table 2*.

- 3/The coloured bands joining Toronto with other centres represent direct desire lines between origin and destination airports. Real journeys may involve several stages, several carriers, and indirect routing. There are no direct commercial flights from Toronto to Boston for example.

Each band is in one or another of five broad categories of trip volume, as follows: (passengers in 1964, both ways): 0-50,000; 50,000-100,000; 100,000-200,000; 200,000-300,000; and over 300,000.

Sources:

1. Air Transport Board, Ottawa — Origin and Destination Statistics, Main-line Revenue Passengers. Domestic Survey 1963-64.
2. Air Transport Association of America, Washington D.C. — International Origin-Destination Survey of Passenger Journeys via U.S. Domestic/Foreign Flag Airlines, 1964.

- 4/The circles show by their different size (area) the relative two-way volumes, at each airport, of domestic (Canadian) flights. A circle half an inch in diameter represents 1 million trips in 1964.

For each airport (other than Toronto and Montreal), the circle is subdivided to show the proportion of its traffic which is with Toronto (coloured sector) and with Montreal (grey sector).

For source, see notes on Fig. 3.

- 5/See *Table 2*. New York and Newark SMSA's have been consolidated on this map.

- 6/This graph depicts two sets of population accumulation by straightline distance from Toronto, first (shown coloured) of very large places whether Canadian or U.S., and second of Ontario main centres (shown grey). Toronto and Montreal have been added to both accumulations. See *Table 2*.

- 8/The broad light-grey stripes represent by their respective heights the relative strengths of the different sectors of employment in 11 metropolitan areas combined. These (weighted average) strengths are then compared with those of the Toronto Census Metropolitan Area. See *Table 3*.

CHAPTER 2. PAST GROWTH

- 9/A significant topographic feature in relation to urban expansion is the watershed between Lakes Ontario and Simcoe. It coincides with the northern boundary of the Metropolitan Toronto and Region Conservation Authority, and extends from north of Bolton through Aurora to Claremont.
- 10/Governor John Graves Simcoe is most frequently credited with the strategic concept of the system of roads built in the 1790's. Yonge St. is probably the best known of these today.
The density of the historic rural access road network ranges from a low of 1 mile of road allowance per square mile of land in West Flamborough Twp. to almost 3 miles per square mile in Pickering Twp.
- 11/Departure of the first train from Toronto is commemorated by a plaque at the Front Street entrance of today's Union Station. The Ontario, Simcoe and Huron Union Railway was built to the early eastern broad gauge of 5'6", and the route out of Toronto was that followed today by the CNR Newmarket Subdivision, through Parkdale, Downsview and Maple.
The photograph on page 18 shows "Lady Elgin", one of three locomotives constructed in Toronto for the line.
- 11| When comparing a town's rate of growth for different periods, the reader will
12| make allowance for the variation in the length of the pictured interval (40,
13| 30, 30 and 13 years, respectively).
14|
- 12/The radial electric railways ranged from light roadside tramways to heavy equipment operating on separate rights of way. The section to Richmond Hill operated until 1948.
- 15/In the intercensal period 1921-1951, the average annual population increase was 1.8 percent, but in the intercensal period 1951-1961 the average annual increase rose to 4.0 percent. Thus an average increase of only 768,000 in the first period of 30 years was followed by an increase of 869,000 in only 10 years, to reach a 1961 population of 2,672,000.
Because early statistics are conveniently available only on a county basis, long term trends have been demonstrated using a group of whole counties instead of the precise MTARTS region. Population is about 7% larger than for the MTARTS area. See *Table 4*.
- 16/See *Table 5*.
- 17| In the series Fig. 17 to Fig. 20, only characteristic elements of the total
18| urban transportation system are shown. Components which, though impor-
19| tant, handled a relatively small portion of the total demand are not shown.
20| For example, the railway network is omitted from Figs. 18 and 19, outer-suburban bus routes from Figs. 19 and 20, and the (then) five extra-fare suburban coach routes are not separately distinguished in Fig. 19.

CHAPTER 3. PRESENT ACTIVITIES

- 21/In compiling this map, it was the intention to show as housing areas only those lands which generate a significant number of trips from home to work for most of the year. It therefore excludes areas occupied by large institutions, summer cottages, farm houses, and sporadic rural non-farm residences unless they form part of a wider pattern. Rural hamlets with fewer than 250 people are excluded too, except in the commuter belt.
The special "scattered housing" category is intended to identify several situations common in fringe areas. They include subdivisions under construction and only partially occupied, series of disconnected small subdivisions, ribbons of housing, and large-lot unserviced housing areas. Notwithstanding that many older hamlets are dispersed in form, they have been deliberately excluded from the "scattered housing" category, in order that the latter shall represent essentially urban outliers, with commuting needs.

Boundaries on the map are straight-line generalizations interpreted from street maps, land use maps, and aerial photographs, and are not necessarily exact limits of residential use.

The variations in density shown are based on calculations of gross residential density for each of 914 data zones in the region, and accordingly, seldom indicate peak densities occurring within a zone. The number of dwelling units credited to each zone was obtained from the DMA/MTPB inventories for May-June 1964. The gross residential acreage for each zone was provided by MTPB for the MT area, and developed by MTARTS and DMA for other areas. The definition of "gross residential area" used here includes local streets, schools, parks and other residentially subordinate uses.

- 22/Each coloured dot represents 1,000 residents, excluding farm and scattered non-farm populations, and is based on the MTPB/DMA series of numerical characteristics of 914 data zones in the region, at May-June 1964. Outside the Metropolitan Toronto area, the dots shown account for 83% of the total reported population.

Each disc represents, in proportion to its area, the number of persons employed in that locality. Superzones were created by aggregation of MTARTS data zones, having regard to concentrations of zonal employment reported by MTPB and DMA and to maps of land use, particularly MTOP/65, Plate 1. Proportionate-area circles were plotted at assumed superzone centroids of employment. Superzones aggregating fewer than 500 jobs were discarded. Those aggregating between 500 and 1,000 were scaled up to represent 1,000, to avoid confusion with population dots. The 92 job concentrations shown account for 87% of the reported total regional employment (1,009,000).

- 23/The shaded areas represent localities where the predominant land use is industrial (generally, mining, manufacturing and warehousing). Within each generalized area there may be pockets of other uses. Except in the case of pits and quarries, the degree of shading as a general rule indicates the intensity of present use, the average age of buildings, and (inversely) the amount of room for increased activity by infilling and expansion.

The map was developed from MTOP/65, Plate 1, from an unpublished map by DMA dated Nov. 1964, and from Industrial Mineral Report #5, 11 and 13, Ontario Dept. of Mines.

- 24/The area of both squares and circles is proportional (on the same scale) to the number of establishments (stores plus other). Within Metropolitan Toronto, the numbers represented came from Table 2 of the Interim Report (Feb. 65) of the MTPB Urban Renewal Study in the case of the older commercial concentrations, and from MTPB listings for plazas. In the case of plazas the actual number of establishments was replaced by a number obtained by dividing the floor area of that plaza by the Metro-wide average floor area per plaza establishment. Elsewhere in the region, source of establishment counts was DMA or MTARTS field surveys and, in the absence of floor area statistics, simple weighting was applied to large establishments (e.g. department stores 16) in arriving at the weighted count.

The criteria for identifying centres within older commercial strips are those used in the Urban Renewal Study Report. Centres of any type with a weighted count of fewer than 25 establishment units are not shown.

Two symbols have been inadvertently omitted from the map—A circle (30 weighted units) at Bayview and Eglinton; and a square (166 units) at Bayview and Millwood.

- 25/The functional groupings shown are from a report June 1963 by the City of Toronto Planning Board: "Downtown Toronto, Background Studies", Fig. 1-1. The coloured discs represent the distribution of employment in 1960, according to data provided by the MTPB. Due to the high rate of downtown redevelopment, particularly in the south west quadrant, this employment pattern is already out of date. The Toronto-Dominion Centre, the New City Hall, and other locations have deducted or added their local quotas of employment.

The figure of 140,000 jobs mentioned in the text is based on 1964 employment figures for census tracts 73-76, and 1960 figures for blocks immediately adjoining.

26/The figure of 95 municipalities neglects the Twp. of Grimsby and the County of Lincoln, a small corner of which is included within the HATS and MTARTS boundaries

Oakville and Burlington are classified towns, but they are township-sized by reason of recent amalgamation each with its adjoining township.

27/In choosing boundaries for the analysis areas and sectors, the boundaries of existing statistical units were followed wherever feasible. In most cases, the sectors are formed of whole municipalities. In all cases, boundaries respect census tracts and MTPB/MTARTS 1964 data zones.

Within the Metropolitan Toronto area, the sectors are adapted from the numbered Planning Districts established by the Metropolitan Toronto Planning Board (reference MTOP/65, Plate 2). The MTARTS Analysis Sector #1 (Toronto Core) corresponds to MTPB Planning District #1. Minor differences elsewhere are due to recognition of the MTARTS regional series of 343 calibration superzones, and of municipal boundaries. Thus Scarborough in its entirety becomes a MTARTS sector.

The sectors are delineated on Map 1 and further described in Table 6 which follows the map.

CHAPTER 4. CURRENT TRENDS

28/See Table 7.

29/Data to six-county base as Fig. 15 (less Simcoe).

Sources: Census of Upper Canada, 1851.

Census of the Canadas, 1861.

Census of Canada, 1871-1961.

30/Data is for a seven-county equivalent of the MTARTS region (Halton, Ontario, Peel, Simcoe, Wellington, Wentworth, York). Sources as Fig. 29.

31/The 1964 curve is derived from population numbers for each 1961 census tract, updated to 1964 by MTPB. The 1956 curve is based on populations reported by the census of Canada, 1956, for an identical set of tracts (in Metropolitan Toronto). Zonal population was aggregated for 1-mile concentric rings according to location of zone centroids of population. Population was divided by total land area of ring in each case. Densities at points of abrupt change were checked and refined using 1:100 population dot maps prepared by TTC. The 1899 reference curve came from Fig. 12, MTOP/59. The break at about 5 miles distance in both 1956 and 1964 curves marks the transition from the densely-built City to the more spacious suburbs. The pronounced bulge in the 1956-1964 increment which is greatest at 9 miles is due partly to infilling but mostly to the advent of apartments in the intervening period. Urban growth became discontinuous at about 8 miles in 1956, 10 miles in 1964.

The growth rates for apartments (107%) and other forms of housing (13%) apply to the Metropolitan Toronto area only, according to the following sources:

- 1958 — MTOP/59, Table 21.
- 1964 — MTPB apartment inventory, list dated Aug. 13, 65.

32/In compiling the statistics for this map, buildings having fewer than 6 self-contained apartment units were excluded, along with row housing, maisonettes and town houses. The concentrations shown account for not quite 90% of the apartment units in Metropolitan Toronto, and a rather higher percentage elsewhere. The remaining 10% are in the form of scattered small or isolated large buildings. Concentrations of fewer than 30 units are not shown.

Source is an MTPB updated version of Plate 21, MTOP/59; DMA and various municipal staffs outside Metro.

Of the apartment areas shown on this map, those having the greatest number of apartment units in 1964 were Church-Wellesley (7200), King-Jamieson (5800), Yonge--St. Clair (5600), Yonge-Eglinton (5000), Hamilton Centre (3800) and Eglinton-Bathurst (3700).

33/See *Table 8*, wherein 1961 retail sales have been adjusted to 1951 dollar value by being multiplied by a factor ($100 \div 133.75$).

34/Although statistics are presented for the MTP Area only, the outline of the entire MTARTS Analysis Area No. 4 is shown for convenience of relating this area to preceding maps.

Construction employment is excluded from this comparison, because of its mobile character.

The employment data shown were compiled by MTPB for groups of the Board's Major Planning Districts. These groups approximate MTARTS Analysis Sectors, the largest differences being along the Scarborough western boundary. The Scarborough data is overstated to that extent. For easier identification the data has been plotted against a background of MTARTS Analysis Areas. See *Table 9*.

35/See *Table 10*.

36/The TTC has undertaken a survey of traffic at these two cordons twice a year for many years past, and has kindly made these records available for analysis. Neither cordon coincides with the boundary of a MTARTS analysis sector, but Sector 1 (Toronto Core) is intermediate in size between the two cordoned areas. The 1964 activity enclosed in the three cases is as follows:

	<i>Population</i>	<i>Employment</i>
1/Downtown Cordon	5,000	110,000
2/Analysis Sector #1	143,000	284,000
3/Intermediate Cordon	258,000	305,000

Source: MTPB inventories

37/The TTC February data was screened to exclude pedestrians, cyclists and persons in trucks. By the position of the southern leg of the Downtown Cordon, this has the effect of screening out rail passengers arriving at Union Station, and also persons arriving by car and parking in the public lots south of the railway.

"Auto" includes both drivers and passengers, and "total" is the sum of "auto" and "TTC".

At the Intermediate Cordon, only counts at approximately 5-year intervals are shown prior to 1949, and a data gap at 1956 was simply bridged.

The temporary offset in the automobile component of both cordons between 1957 and 1961, but most notable across the Intermediate Cordon, probably is due to a reduction of through trips following opening of major by-pass facilities — Highway 401, Eglinton Ave. East, Lawrence Ave. East.

38/Although the number of persons crossing the Downtown Cordon by automobile and by transit in a weekday 17-hour period is now approximately equal, the peak accumulation by automobile is only one-third of that by transit (Fig.37). Presumably a much greater portion of the trips by car than of those by transit are non-work trips or transient trips which remain within the downtown area for relatively short periods.

39/The 30-minute travel time contours shown represent morning peak conditions. They do not include terminal times, such as walk from home to bus stop or from parking lot or subway to office, and which vary widely in individual cases.

The contours have shifted again since 1964, with advantage accruing to the northeast from linking of the Gardiner Expressway and the Don Valley Parkway, and from the opening of the Bloor Subway.

An exception to the 8-year interval was made in the case of transit time contours. 1953 (prior to the Yonge Subway) provided a more meaningful datum for change than would 1956.

Sources: TTC drg. 5618 and others.

Dots indicating population increase were derived from comparison of 1964 DMA/MTPB Zonal inventories with 1956 census. Decreases in population are not shown.

CHAPTER 5. TRAVEL DEMAND

- 40/The arrows are proportional in width to the number of trips between given pairs of activity groups. Each circle is proportional in area to the number of arrivals at, plus departures from, that activity. The arrows within each of the top pair of circles represent a number of trips whose origins and destinations both are in the same activity group. See *Table 11*.
- 41/Vertical ordinates of this graph represent the percentage of all trips in 24 hours which originate in successive 1-hour periods, plotted at the mid-interval. Source is the first expanded trip file, MTPB/MTARTS Home Interview Survey, 1964.
- 42/The source is expanded trips, all modes and purposes, 24 hours, from the MTPB/MTARTS Home Interview Survey, 1964, grouped by 12-minute increments of trip duration and plotted at mid-interval. It includes walking trips to work.
To the extent that some people who live close to work make second trips from home to work, the true work trip distribution is weighted here towards the short-duration end.
- 43/The number of households were reported for each MTARTS data zone by MTPB and DMA, and aggregated to 23 sectors.
The worker-household ratio for each sector was determined from the "occupation" responses of the sample households in the MTPB/MTARTS Home Interview Survey, 1964. "Workers" were assumed to be all persons not declaring themselves to be housewives, students, unemployed or retired persons. See *Table 12*.
- 44/Each circle represents, by proportional area, the number of jobs in each designated grouping of MTARTS Analysis Areas. The arrows represent, by proportional width, volumes of person trips home to work in 24 hours, typical weekday, all modes except walk. One arrow of each pair is coloured darker, and this is the dominant direction of flow. Source is stated on *Table 13*.
- 45/The number of resident workers in each sector was aggregated from the Fig. 43 source. The employment numbers were aggregated from MTPB and DMA inventories of 1964 employment by MTARTS data zone. See *Table 14*.
- 46/See *Table 15*. Source: Expanded trips from MTPB/MTARTS Home Interview Survey, 1964, trips from home only, with walking trips excluded.
- 47/Source as Fig. 46, but with trips accumulated for 18-minute increments of duration, and plotted cumulatively, for trip origins in three groupings of MTARTS Analysis Areas: "Toronto" (1,2,3,4), "Hamilton" (6,7) and "Other Cities" (8,9,10).
- 48/The roads whose volume-time patterns are shown are respectively Highway 5 west of Highway 27, Highway 400 north of Highway 7, and Highway 401 west of Highway 27.
- 49/The 914 MTARTS basic data zones were grouped into 343 for the purpose of calibrating the traffic model of the region. Trips originating within the region between 7 a.m. and 9 a.m., together with trips from outside which crossed into the region in the same period, were then assigned to a 343-node network according to minimum-distance paths. The 343 zones were next aggregated to 68, and the link assignments accumulated to the simplified 68-node network shown. The boundaries of the 68 zones are shown dotted on the map. The effect of this procedure is to remove from the map evidence of trips which have both origin and destination within one of the 68 zones. The average zone dimension in the urbanized lakeshore corridor is 3 miles. The only trips of shorter length which are still represented in the link volumes are those which moved across a zone boundary, and the map remains broadly indicative of the pattern of medium and long-distance trips in the morning peak. Trips to work, business trips, and school bus trips therefore predominate.

Where the link volumes are less than 1000 person-trips, a token line only is shown on the map. This has the effect of heightening volume contrasts around the 1000 trip level.

Sources for trip data include DHO for trips inbound into the region, and the MTPB/MTARTS Home Interview Survey, 1964 for trips beginning within the region (TRC machine tabulation 2017-062-03).

50/A second assignment to the same regional 343-node network (see notes on Fig. 49), but this time excluding walk trips, was the basis of this map. In the Metropolitan Toronto area, where 198 of the 343 zones were located, an aggregation to 88 zones resulted in the network shown. The boundaries of the zones are shown dotted on the map. They respect boundaries of MTARTS 914-series data zones and of 1961 census tracts also.

The average zone dimension is about 1½ miles. Some trips in the medium to short category which were excluded from Fig. 49 therefore appear in the link volumes on this map. This gain is offset by the dropping of walk trips, which usually are short.

Sources as Fig. 49, with walk trips removed.

51/For household count (size of squares), see notes on Fig. 43. The number of cars were determined for each 914-series zone from expansion of HIS-64 responses, aggregated to Analysis Sectors, and divided by the number of households. See *Table 16*.

Within the Sectors whose average characteristics are shown extending from 0.78 to 1.29, there are much greater local variations. For example, MTARTS data zone averages range from 0.33 to 2.18 cars per household. House by house variations of course are greater still. In 1961, 29 per cent of households in Metropolitan Toronto owned no car, while 11 per cent owned two or more (MTTP/64, p. 16).

52/The designation "transit" on the map is used in a very broad sense to describe all trips not made as auto driver or passenger. In outer suburban and rural areas especially, the transit component is augmented by large numbers of student trips made by school bus. The source (TRC-PCMSF) eliminates trips taking place entirely within MTARTS 343-series calibration zones (97,000 trips). This has the effect of reducing the number of walk-to-work trips (classified with transit) to those which cross a zone boundary, about 18,000 in total. See *Table 17*.

LIST OF TABLES

Table 1. List of included local municipalities (85) <i>MTARTS region, 1964</i>	(Fig. 2)
Table 2. Population of main urban centres <i>Great Lakes — Seaboard conurbation, and Ontario</i>	(Figs. 2 and 5)
Table 3. Comparison of employment structure <i>12 major metropolitan areas, 1960 and 1961</i>	(Fig. 8)
Table 4. Population change <i>Seven-county area, 1851-1961</i>	(Fig. 15) (thousands)
Table 5. Changing Employment Structure <i>Seven-county area, 1871-1961</i>	(Fig. 16) (thousands)
Table 6. Definition of MTARTS Areas and Sectors <i>MTARTS region</i>	(Fig. 27)
Table 7. Distribution of population change <i>MTARTS region, 1956-1964</i>	(Fig. 28) (thousands)
Table 8. Change in retail sales <i>MTARTS region, 1951-1961</i>	(Fig. 33) (millions of dollars)
Table 9. Employment change <i>MT Planning Area, 1956-1964</i>	(Fig. 34) (thousands)
Table 10. Employment change <i>Toronto core area</i>	(Fig. 15) (thousands)
Table 11. Total person trips by major purpose <i>MTARTS region, 1964</i>	(Fig. 40) (thousands of trips)
Table 12. Distribution of households and workers resident <i>MTARTS region, 1964</i>	(Fig. 43) (thousands)
Table 13. Interchange of work trips <i>Major subdivisions of MTARTS region</i>	(Fig. 44) (thousands)
Table 14. Distribution of workers resident, and of employment <i>MTARTS region, 1964</i>	(Fig. 45)
Table 15. Number and average duration of week-day trips from home <i>MTARTS region, 1964</i>	(Fig. 46) (thousands and minutes)
Table 16. Distribution of automobiles <i>MTARTS region, 1964</i>	(Fig. 51) (thousands)
Table 17. Choice of Transportation <i>MTARTS region, 1964</i>	(Fig. 52)

Table 1. List of included local municipalities (85)
MTARTS region, 1964

(Fig. 2)

Municipality	Area sq. miles	Population 1964	Municipality	Area sq. miles	Population 1964
(1)	(2)	(3)	(1)	(2)	(3)
CITIES:			Tottenham	.6	780
Toronto	40.6	636,239	Cookstown	.5	676
Hamilton	47.2	275,670	Caledon East	.6	663
Oshawa	16.3	69,822	Total, 16 Villages	17.6	69,121
Guelph	10.8	41,993	TOWNSHIPS:		
Barrie	8.9	23,502	York North	69.4	334,887
Total, 5 Cities	123.8	1,047,226	Scarborough	70.3	251,675
TOWNS:			Etobicoke	42.7	194,099
Burlington	85.5	54,864	York	7.9	127,370
Oakville	108.0	48,523	Toronto	108.2	76,066
Brampton	8.7	29,634	York East	5.9	70,882
Richmond Hill	2.5	19,217	Pickering	110.5	24,363
Leaside	2.3	18,783	Vaughan	101.7	17,895
Mimico	.8	18,584	Saltfleet	37.0	17,276
Whitby	6.6	14,243	Markham	101.3	15,651
Dundas	5.7	14,185	King	142.5	12,817
New Toronto	1.2	11,668	Gwillimbury East	98.5	11,906
Georgetown	5.0	11,374	Chinguacousy	120.7	11,691
Weston	1.0	10,214	Ancaster (Part)	26.7	12,215
Aurora	5.5	9,875	Darlington	110.6	10,045
Newmarket	2.9	8,493	Whitchurch	93.2	7,656
Ajax	4.5	8,523	Innisfil	109.9	7,205
Bowmanville	5.5	7,872	Whitby	50.5	7,204
Port Credit	1.0	7,301	Esquesing	101.4	6,885
Stoney Creek	.8	6,753	Gwillimbury North	50.5	5,802
Milton	1.6	6,165	Flamborough West (Part)	31.4	5,827
Streetsville	1.7	5,697	Guelph	51.1	5,255
Orangeville	2.8	5,106	Flamborough East	42.7	4,733
Acton	1.8	4,295	Caledon	106.9	3,929
Alliston	1.3	3,529	Beverly (Part)	8.7	652
Uxbridge	.8	2,549	Glanford (Part)	15.2	4,124
Bradford	2.3	2,379	Erin	110.3	3,376
Total, 24 Towns	259.8	329,826	Reach	98.2	3,157
VILLAGES:			Albion	87.0	3,400
Forest Hill	1.5	22,494	Eramosa	70.0	3,037
Long Branch	.9	11,658	Tecumseth	104.4	2,997
Swansea	1.1	9,322	Whitby East	33.2	2,995
Markham	3.0	5,702	Uxbridge	83.7	2,816
Stouffville	2.4	3,656	Nassagaweya	71.5	2,594
Woodbridge	1.0	2,481	Gwillimbury West	71.0	2,450
Port Perry	1.1	2,371	Georgina	53.6	2,462
Bolton	1.1	2,075	Binbrook (Part)	17.8	1,623
Waterdown	.6	1,898	Scott	78.7	1,879
Pickering	.7	1,860	Adjala	70.1	1,986
Sutton	1.0	1,423	Toronto Gore	23.6	1,177
Erin	.8	1,133	Total, 40 Townships	2,788.5	1,283,969
Beeton	.7	929	Total in Region	3,189.7	2,730,142

Source: Municipal Directory, DMA. Zone inventories for 5 part-townships.

Table 2. **Population of main urban centres**
Great Lakes — Seaboard conurbation, and Ontario

(Figs. 2 and 5)

A. CENSUS METROPOLITAN AREAS — CANADA (1961)

Montreal	2,109,509	Windsor	193,365
Toronto	1,824,481	London	181,283
Ottawa	429,750	Kitchener	154,864
Hamilton	395,189	Sudbury	110,694

B. MAJOR URBAN AREAS — CANADA (1961)

St. Catharines	95,577	Sault Ste. Marie	58,460
Fort William/Port Arthur	93,251	Brantford	56,741
Oshawa	80,918	Niagara Falls	54,649
Kingston	63,419	Peterborough	49,902
Sarnia	61,293	Guelph	41,767
		Timmins	40,121

C. OTHER CITIES OF 20,000 INHABITANTS AND OVER — CANADA (1961)

Cornwall	43,639	St. Thomas	22,469
Welland	36,079	Barrie	21,169
Belleville	30,655	Woodstock	20,486
Chatham	29,826	Stratford	20,467
North Bay	23,781		

D. STANDARD METROPOLITAN STATISTICAL AREAS — U.S.A. (1960)

New York	10,694,633	Washington	2,001,897
Chicago	6,220,913	Cleveland	1,796,595
Detroit	3,762,360	Baltimore	1,727,023
Philadelphia	3,591,523	Newark	1,689,420
Boston	2,589,301	Buffalo	1,306,957
Pittsburgh	2,405,435	Milwaukee	1,232,731

Table 3. **Comparison of employment structure**
12 major metropolitan areas, 1960 and 1961

(Fig. 8)

Metropolitan area	Labour** force	Percentage of labour force employed in				
		Service	Manufacturing	Finance	Government	Other
(1)	(2)	(3)	(4)	(5)	(6)	(7)
New York	4,373	50.4	30.3	7.8	5.0	6.5
Chicago	2,512	44.7	38.9	5.1	4.0	7.3
Philadelphia	1,645	43.6	40.8	4.7	5.0	5.9
Detroit	1,329	42.9	44.8	3.8	4.0	4.5
Boston	1,024	48.0	33.9	6.1	6.0	6.0
Pittsburgh	823	45.2	42.1	3.7	3.5	5.5
Montreal	806	47.3	38.6	5.2	5.5	3.4
Washington	792	48.0	13.2	4.9	27.0	6.9
Toronto	790	48.9	36.2	6.6	5.0	3.3
Cleveland	687	42.8	44.3	4.1	4.0	4.8
Baltimore	643	45.6	36.2	4.5	7.0	6.7
Buffalo	477	43.7	43.8	3.5	4.0	5.0
11 Metro Areas*	15,127	46.5	36.0	5.5	5.8	6.2

*Excludes Toronto

**Figures in thousands

CATEGORY DEFINITIONS:

(3) Service — Community, personal and business services; transportation, communications, utilities, trade.

(4) Manufacturing — Manufacturing, construction.

(5) Finance — Finance, insurance, real estate.

(6) Government — Public administration, defence.

(7) Other — Agriculture, forestry, fishing, trapping, mines, quarries, unspecified.

Sources: Census of Canada, 1961

U.S. Census 1960

Table 4. **Population change**
Seven-county area,* 1851-1961

(Fig. 15)
(thousands)

Year	Total Population	Natural increase	Net migration
(1)	(2)	(3)	(4)
1851	250.0		
1861	341.0	FIGURES NOT AVAILABLE	
1871	404.6		
1881	479.3	46.3	28.4
1891	590.5	52.9	58.3
1901	605.9	45.2	— 29.8
1911	780.8	54.7	120.3
1921	1,034.7	108.9	145.0
1931	1,303.2	129.0	139.5
1941	1,430.6	100.0	27.4
1951	1,802.9	167.8	204.5
1961	2,672.4	354.4	515.1

* Halton, Ontario, Peel, Simcoe, Wellington, Wentworth, York.

Sources: (2)—Census of Upper Canada 1851
Census of the Canadas 1861
Census of Canada 1871-1961

(3), (4)—Province of Ontario
Rept. of Registrar Gen.
Vital Statistics

Table 5. **Changing Employment Structure**
Seven-county area,* 1871-1961

(Fig. 16)
(thousands)

Year	Agriculture, Lumbering		Manufacturing, Construction		Service, Communications		Unspecified, Others		Totals	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1871	40.7	36.0	28.8	25.5	23.5	20.8	19.9	17.7	112.9	100.0
1891	96.5	45.9	44.5	21.2	63.4	30.2	5.7	2.7	210.1	100.0
1911	104.9	34.1	97.3	31.7	96.5	31.4	8.5	2.8	304.5	100.0
1921	110.3	28.2	113.4	29.0	151.7	38.8	16.0	4.0	391.4	100.0
1931	127.5	24.9	111.4	21.7	216.5	42.3	56.1	11.1	511.5	100.0
1941	53.5	9.4	149.1	26.2	327.9	57.6	38.4	6.8	568.9	100.0
1951	38.0	4.7	357.7	44.5	400.3	49.8	7.8	1.0	803.8	100.0
1961	34.7	3.2	416.5	38.1	630.5	57.6	12.4	1.1	1,094.1	100.0

* Halton, Ontario, Peel, Simcoe, Wellington, Wentworth, York.

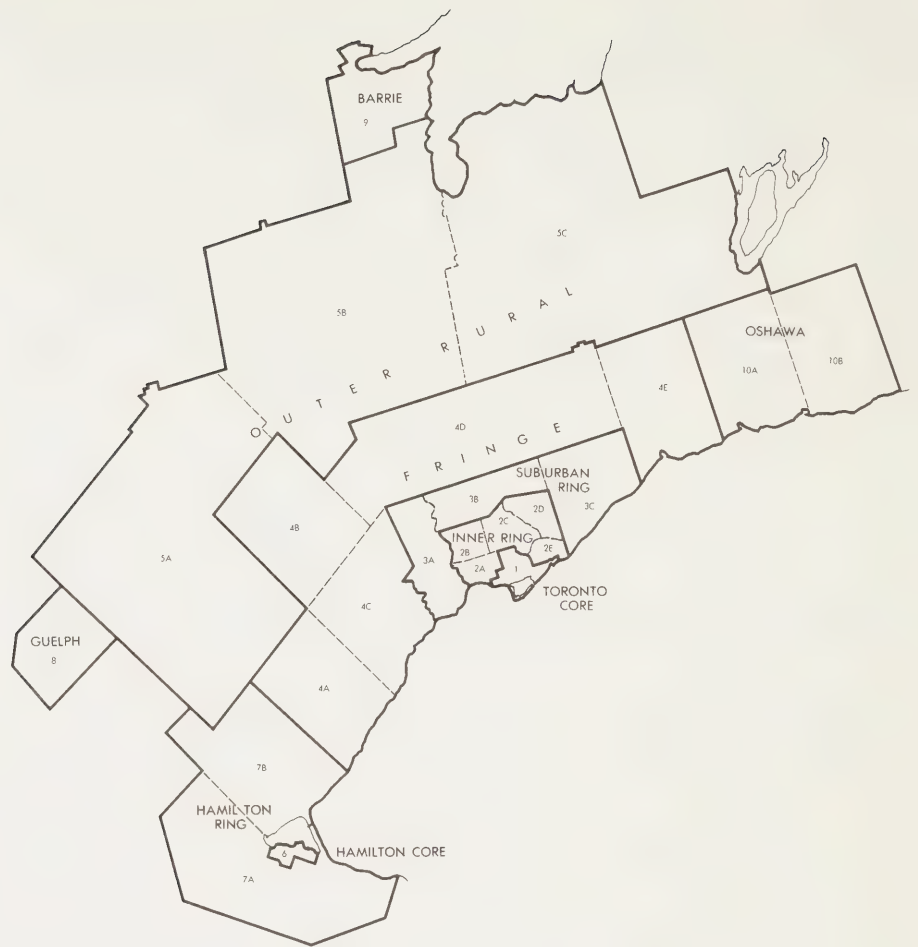


Table 6. **Definition of MTARTS Areas and Sectors**
MTARTS region

(Fig. 27)

Analysis Area No.	Analysis Area Name	Analysis Sector No.	Analysis Sector Name	Description of Sector
(1)	(2)	(3)	(4)	(5)
1	Toronto	1	Core	MTPB Planning District #1
2	Inner Ring	2A	West End	MTPB Planning District #2
		2B	North West	MTPB Planning District #3, less Census Tract 35
		2C	North Central	MTPB Planning District #4, together with Census Tract 35
		2D	North East	MTPB Planning District #5, together with minor Planning District 6c.
		2E	East End	MTPB Planning District #6, less minor Planning Districts #6(c), (d), & (i).
3	Suburban Ring	3A	Etobicoke	Mimico, Long Branch, New Toronto, Township of Etobicoke.
		3B	North Metro	All of Township of North York lying north of Highway 401.
		3C	Scarborough	Township of Scarborough.
4	Fringe	4A	Oakville	Towns of Oakville and Milton.
		4B	Brampton	Township of Chinguacousy.*
		4C	Toronto Twp.	Township of Toronto.*
		4D	North Fringe	Village of Stouffville, Townships of Vaughan, Markham, Toronto Gore.*
		4E	Pickering	Township of Pickering.*
5	Outer Rural	5A	Outer Rural West	Town of Orangeville, Townships of Caledon, Eramosa, Erin, Esquesing, Nassagaweya.*
		5B	Outer Rural North West**	Townships of Albion, Adjala, King, Innisfil (pt), Tecumseth, West Gwillimbury.*
		5C	Outer Rural North East**	Townships of East Gwillimbury, North Gwillimbury, Georgina, Reach, Scott, Uxbridge, and Whitchurch.*
6	Hamilton Core	6	Hamilton Core	Central core of City of Hamilton.
7	Hamilton Ring	7A	Hamilton Suburban	Outer ring of City of Hamilton together with inner parts of the Townships of Saltfleet, Binbrook, Gianford, Ancaster, Beverly and W. Flamborough as defined in HATS report.
8	Guelph	7B	Burlington	Towns of Burlington, Waterdown, and Township of Flamborough.
9	Barrie	8	Guelph	City of Guelph, Township of Guelph.
10	Oshawa	9	Barrie	City of Barrie, Township of Innisfil (pt).
		10A	Oshawa West	Townships of East Whitby and Whitby.*
		10B	Oshawa East	Darlington Township.*

* Included in these sectors are all incorporated municipalities within the geographical limits of named townships.

** The precise boundary between 5B and 5C is the western boundary of 914-series MTARTS data collection zones nos. 3411, 3421, 3434, 3510, 3810, 3820, and 3910.

Table 7. **Distribution of population change**
MTARTS region, 1956-1964

(Fig. 28)
(thousands)

MTARTS Analysis Sectors	Population			Percentage increase	
	1956	1964	Increase	In sector	of region
(1)	(2)	(3)	(4)	(5)	(6)
Region	2,064	2,809	745	36.1	100.0
1	143	120	—23	—16.1	—3.1
2a	235	240	5	2.1	.7
2b	192	238	46	24.0	6.2
2c	181	197	16	8.8	2.1
2d	35	93	58	165.7	7.8
2e	209	211	2	1.0	.3
3a	140	239	99	70.7	13.3
3b	88	186	98	111.4	13.2
3c	138	255	117	84.8	15.7
4a	16	55	39	243.8	5.2
4b	18	39	21	116.7	2.8
4c	58	91	33	56.9	4.4
4d	42	64	22	52.4	3.0
4e	22	38	16	72.7	2.1
5a	35	42	7	20.0	.9
5b & c	75	100	25	33.3	3.4
6	43	54	11	25.6	1.5
7a	243	297	54	22.2	7.2
7b	17	54	37	217.6	5.0
8	36	56	20	55.6	2.7
9	23	30	7	30.4	.9
10a	61	92	31	50.8	4.2
10b	14	18	4	28.6	.5

Source: Population 1956—Census of Canada, distributed.
1964—MTARTS zone statistics (DMA/MTPB).

Table 8. **Change in retail sales**
MTARTS region, 1951-1961

(Fig. 33)
(millions of dollars)

MTARTS Analysis Sectors	1951	1961*	Percentage increase
(1)	(2)	(3)	(4)
Region	1,521.9	2,327.2	52.9
1	501.8	517.5	3.1
2a	150.2	176.4	17.4
2b	107.8	200.5	86.0
2c	116.7	161.7	38.6
2d	2.5	36.9	1376.0
2e	161.1	177.0	9.9
3a	55.3	149.7	170.7
3b	15.4	104.9	581.2
3c	17.9	154.4	762.6
4a	12.7	27.5	116.5
4b	9.6	24.2	152.1
4c	7.1	20.2	184.5
4d	9.1	28.4	212.1
4e	—	5.0	—
5a	10.6	17.1	61.3
5b	5.1	9.3	82.4
5c	15.1	26.1	72.8
6 and 7a	214.1	293.6	37.1
7b	7.6	35.4	365.8
8	29.7	41.3	39.1
9	21.2	33.4	57.5
10a	46.8	79.0	68.8
10b	4.5	7.7	71.1

* Adjusted to 1951 dollars.

Source: D.B.S. 1951 CENSUS OF CANADA — Bulletin CT-13
1961 CENSUS OF CANADA — Catalogue 97-502
95-542

D.B.S. Cost of Living Index (for value adjustment)

Table 9. **Employment change**
MT Planning Area, 1956-1964

(Fig. 34)
(thousands)

MTARTS Analysis Sectors*	Manufacturing and wholesale		Other categories		Total	
	1956	1964	1956	1964	1956	1964
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total:	283,200	294,600	378,900	456,300	662,100	750,900
1	99,200	79,300	201,900	204,600	301,100	283,900
2	124,600	119,700	126,700	155,900	251,300	275,600
3a	23,100	44,400	22,300	32,600	45,400	77,000
3b	6,600	12,800	10,300	25,800	16,900	38,600
3c	8,900	17,600	6,600	19,000	15,500	36,600
4c	16,300	15,400	6,100	11,100	22,400	26,500
4d	2,500	3,100	3,300	6,500	5,800	9,600
4e	2,000	2,300	1,700	800	3,700	3,100

Source: Research Division of M.T.P.B. — December 1965

* See notes on Fig. 34 for details of boundary adjustments applying to data for this table only.

Table 10. **Employment change**
Toronto core area*

(Fig. 15)
(thousands)

Year	Manufacturing	Number of employees in each category			Total
		Retail	Service	Others	
(1)	(2)	(3)	(4)	(5)	(6)
1956	104,000	44,000	115,000	38,000	301,000
1960	95,700	41,200	121,900	38,400	297,200
1964	83,000	41,200	126,800	32,900	283,900

* MTARTS Analysis Area No. 1

Source: MTPB — Research Division

Table 11. **Total person trips by major purpose**
MTARTS region, 1964

(Fig. 40)
(thousands of trips)

To	From	Home	Work	Shopping, school, business	Social, recreational	Arrivals, from all origins
Work		924.9 (23.3%)**	—	19.1 (0.5%)	4.0 (0.1%)	948.0 (23.9%)
Home		—	885.9 (22.4%)	544.7 (13.7%)	279.4 (7.1%)	1,710.0 (43.2%)
Shopping, school, business		625.5 (15.8%)	37.0 (0.9%)	200.5 (5.1%)	23.5 (0.6%)	886.5 (22.4%)
Social, recreational		257.7 (6.4%)	13.7 (0.4%)	34.4 (0.9%)	30.8 (0.8%)	336.6 (8.5%)
Departures, to all destinations		1,808.1 (45.5%)	936.6 (23.7%)	798.7 (20.2%)	337.7 (8.6%)	3,881.1* (98.0%)

* 81,000 (2.0%) trips of unspecified purpose not listed
Source: HIS/64 (walk to work included).

** Percentage of total trips

Table 12. **Distribution of households and workers resident**
MTARTS region, 1964

(Fig. 43)
(thousands)

MTARTS Analysis Sectors	Households	Average number of workers per household
(1)	(2)	(3)
Total	753.7	1.30
1	31.8	1.33
2a	57.9	1.51
2b	62.7	1.44
2c	69.5	1.19
2d	26.4	1.26
2e	56.3	1.41
3a	63.5	1.35
3b	46.8	1.30
3c	65.4	1.37
4a	14.7	1.22
4b	10.2	1.38
4c	22.4	1.32
4d	16.7	1.19
4e	8.5	1.16
5a	11.4	1.43
5b	9.1	1.06
5c	16.5	1.06
6	18.4	1.40
7a	76.2	1.08
7b	18.4	1.19
8	12.2	1.37
9	8.0	1.19
10a	24.4	1.29
10b	4.6	1.26

Source: (2) ZI/64
(3) HIS/64

Table 13. **Interchange of work trips**
Major subdivisions of MTARTS region*

(Fig. 44)
(thousands)

From To	Toronto Core	Inner Ring	Suburban Ring	Fringe	Oshawa	Hamilton, Hamilton Ring, Guelph	Barrie
Toronto Core	18.1	148.9	57.6	11.1	.4	.9	1.7
Inner Ring	9.5	131.8	64.8	10.6	.3	.3	2.8
Suburban Ring	3.7	51.5	79.2	14.9	.4	.7	3.3
Fringe	1.0	9.3	11.0	40.8	1.1	4.5	5.6
Oshawa	.1	.7	.6	1.6	30.8	.1	1.3
Hamilton, Hamilton Ring, Guelph	.1	.7	.4	.8	—	127.5	.6
Barrie and Outer Rural	—	.7	.7	1.0	.3	.3	28.2

* Formed of integral MTARTS Analysis Areas (see Map 1 and Table 6).
Source: HIS/64 (home to work trips only, excluding walk trips).

Table 14. **Distribution of workers resident, and of employment**
MTARTS region, 1964

(Fig. 45)

MTARTS Analysis Areas	Workers resident		Employment	
	No.	Per cent	No.	Per cent
(1)	(2)	(3)	(4)	(5)
Region	985,200	100%	1,009,100	100%
1	48,700	4.9	278,000	27.7
2	375,300	38.0	268,000	26.6
3	225,100	22.9	159,900	15.9
4	88,400	8.9	71,100	7.0
5	54,000	5.5	19,700	1.9
6	22,100	2.3	86,200	8.6
7	105,500	10.8	59,900	5.9
8	16,700	1.7	17,400	1.7
9	11,900	1.2	8,700	.8
10	37,600	3.8	39,300	3.9

Sources: Workers: HIS/64
Employment: ZI/64

Table 15. **Number and average duration of week-day trips from home**
MTARTS region, 1964

(Fig. 46)
(thousands and minutes)

MTARTS Analysis Sectors	Work trips		Other trips	
	No.	Duration	No.	Duration
(1)	(2)	(3)	(4)	(5)
Region	890.8	27.8	927.6	21.4
1	32.5	28.4	23.6	30.6
2a	82.3	30.7	45.2	25.4
2b	85.0	31.5	60.6	25.4
2c	73.6	28.3	78.7	23.0
2d	32.4	31.8	37.8	23.0
2e	71.1	32.0	45.0	27.0
3a	77.5	25.0	81.1	21.6
3b	56.5	31.4	67.3	20.8
3c	81.3	32.9	90.0	19.8
4a	15.6	21.3	23.0	17.4
4b	25.0	27.8	15.9	17.4
4c	14.8	20.6	34.1	17.4
4d	17.7	32.5	24.8	18.6
4e	8.5	30.8	11.5	20.8
5a	12.0	22.5	18.7	22.2
5b	7.9	26.6	14.9	24.0
5c	16.0	29.2	25.1	21.0
6	18.3	23.9	16.7	20.8
7a	80.5	23.3	98.2	19.6
7b	20.1	22.3	35.0	18.4
8	18.4	13.1	19.4	17.4
9	10.0	17.0	14.0	19.6
10a	29.0	15.7	40.1	16.8
10b	4.8	20.6	6.9	23.4

Sources: HIS/64, all modes except walk
TRC, Contract 5A

Table 16. **Distribution of automobiles***
MTARTS region, 1964

(Fig. 51)
(thousands)

MTARTS Analysis Sectors	Households	Average number of cars per household
(1)	(2)	(3)
Total	753.7	.98
1	31.8	.48
2a	57.9	.70
2b	62.7	.90
2c	69.5	.88
2d	26.4	1.06
2e	56.3	.78
3a	63.5	1.12
3b	46.8	1.17
3c	65.4	1.17
4a	14.7	1.09
4b	10.2	1.13
4c	22.4	1.29
4d	16.7	1.14
4e	8.5	1.12
5a	11.4	1.20
5b & c	25.6	1.07
6	18.4	.81
7a	76.2	.96
7b	18.4	1.27
8	12.2	1.00
9	8.0	1.03
10a	24.4	1.10
10b	4.6	1.22

* Garaged at places of residence

Sources: (2) — Z1/64

(3) — HIS/64

Table 17. **Choice of Transportation***
MTARTS region, 1964

(Fig. 52)

MTARTS Analysis Sectors	No. of trips	Percentage of trips made by	
		Auto	All other modes
(1)	(2)	(3)	(4)
Region	706,500	66.8	33.2
1	28,600	35.7	64.3
2a	68,500	40.1	59.9
2b	62,700	59.4	40.6
2c	83,600	52.4	47.6
2d	27,000	81.3	18.7
2e	51,600	45.7	54.3
3a	66,400	81.1	18.9
3b	51,600	76.8	23.2
3c	66,300	81.5	18.5
4a	13,300	84.6	15.4
4b	9,000	83.5	16.5
4c	21,300	84.5	15.5
4d	16,800	75.9	24.1
4e	8,000	67.8	32.2
5a	5,500	91.0	9.0
5b & 5c	12,500	75.4	24.6
6	15,900	71.0	29.0
7a	55,300	76.8	23.2
7b	16,800	77.0	23.0
8	6,500	83.0	17.0
9	3,600	82.8	17.2
10a	14,100	79.0	21.0
10b	1,400	93.3	6.7

* For trips originating in the period 7 a.m. to 9 a.m.
Source: HIS/64 (TRC-PCMSF tab November, 1965)

METROPOLITAN TORONTO AND REGION
TRANSPORTATION STUDY

STAFF

P. E. WADE
Study Director

MRS. M. T. BARTLETT
Study Secretary

A. R. SCHMIDT
Technical Director

J. A. VANCE
Transportation Systems Engineer

H. V. THOMPSON
Graphics and
Design Supervisor

F. D. CATTON
Transportation Engineer

I. A. LULIK
Draftsman

I. V. OLIVER
Transportation Engineer

D. C. MCKECHNIE
Data Coordinator

MISS S. M. PORTER
Data Analyst

MISS D. M. T. KELLY
Data Analyst

W. B. GANONG
Program and Liaison Officer

B. LLOYD
Administrative Officer

G. P. CLIFFE-PHILLIPS
Data Analyst

MRS. A. YOUNG
Clerical Assistant

MRS. L. EDMONDS
Clerk Typist

LIST OF PHOTOGRAPHS AND CREDITS

<i>Page</i>		
18	"Lady Elgin" locomotive, 1855	Toronto Public Libraries
20	Cars on Hamilton Bridge, 1925	Toronto Public Libraries
24	Horse car, Toronto, 1890	Toronto Public Libraries
28	Older houses, City of Toronto	H. Thompson
	New apartments, Bayview and Highway 401	M. Biilmann
	Houses, Scarborough	Lockwood Survey Corporation
30	Homes and plants, Don Mills	Lockwood Survey Corporation
32	Older factory, City of Toronto	H. Thompson
	New suburban plants	Lockwood Survey Corporation
35	Older shopping street, Dundas	M. Biilmann
	New shopping centre,	H. Thompson
41	Housing variety, Don Mills	Lockwood Survey Corporation
	Apartment redevelopment, Bloor	Eric Trussler
49	Highway 401 before enlargement	Department of Highways
	Yonge Subway, Davisville	Eric Trussler
57	Queen Elizabeth Way	Department of Highways
	Bathurst Street at Highway 401	Lockwood Survey Corporation
	Boat on Trailer	Department of Tourism and Information
63	Gardiner Expressway, Dufferin	Panda Associates



ONTARIO
PROVINCE OF OPPORTUNITY